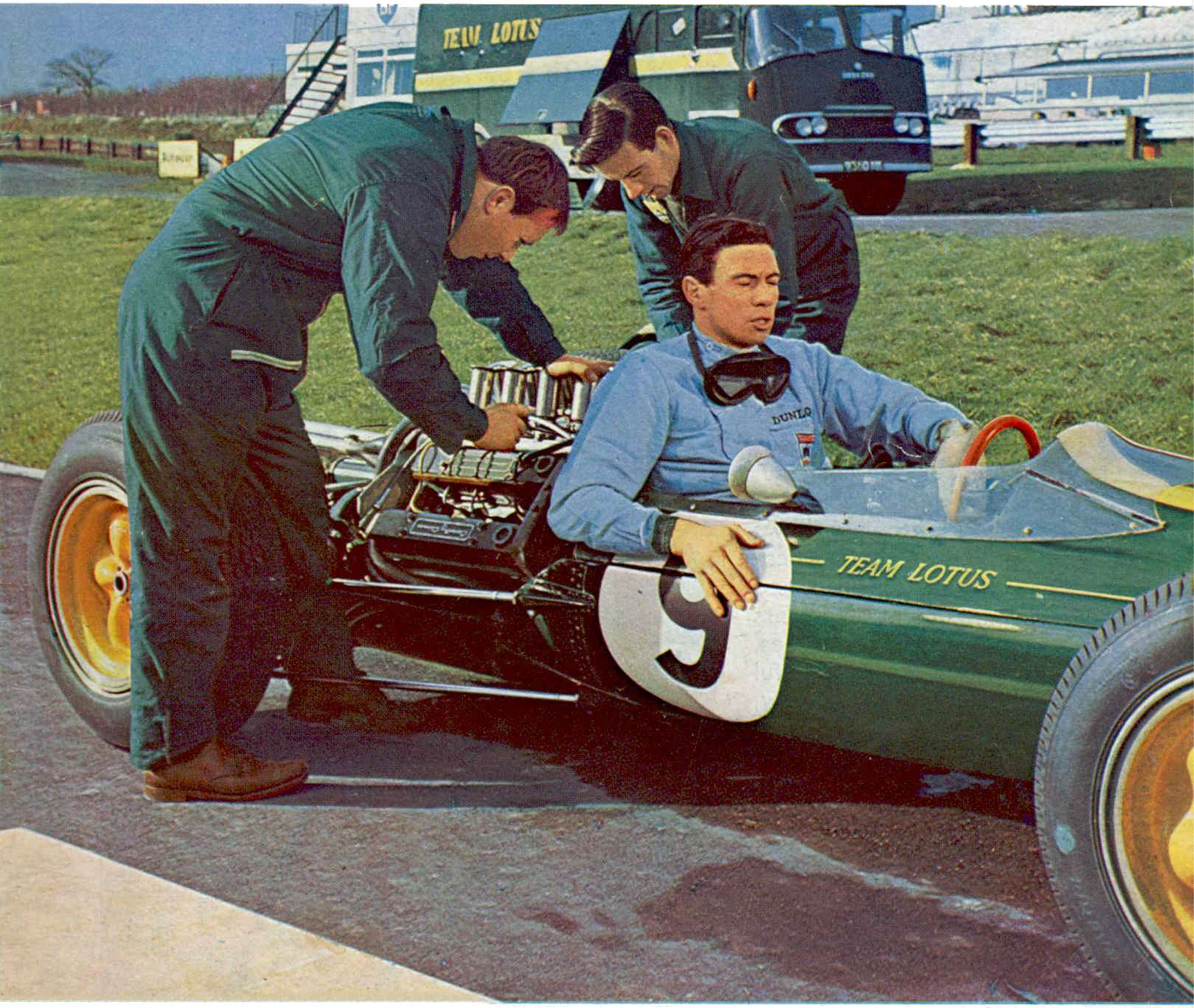
meccano magazine

MARCH

1964



the practical boy's hobbies magazine

IN THIS ISSUE

- **The man who makes the right decisions**
- **Fireball XL5—Universe in miniature**

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MECCANO MAGAZINE

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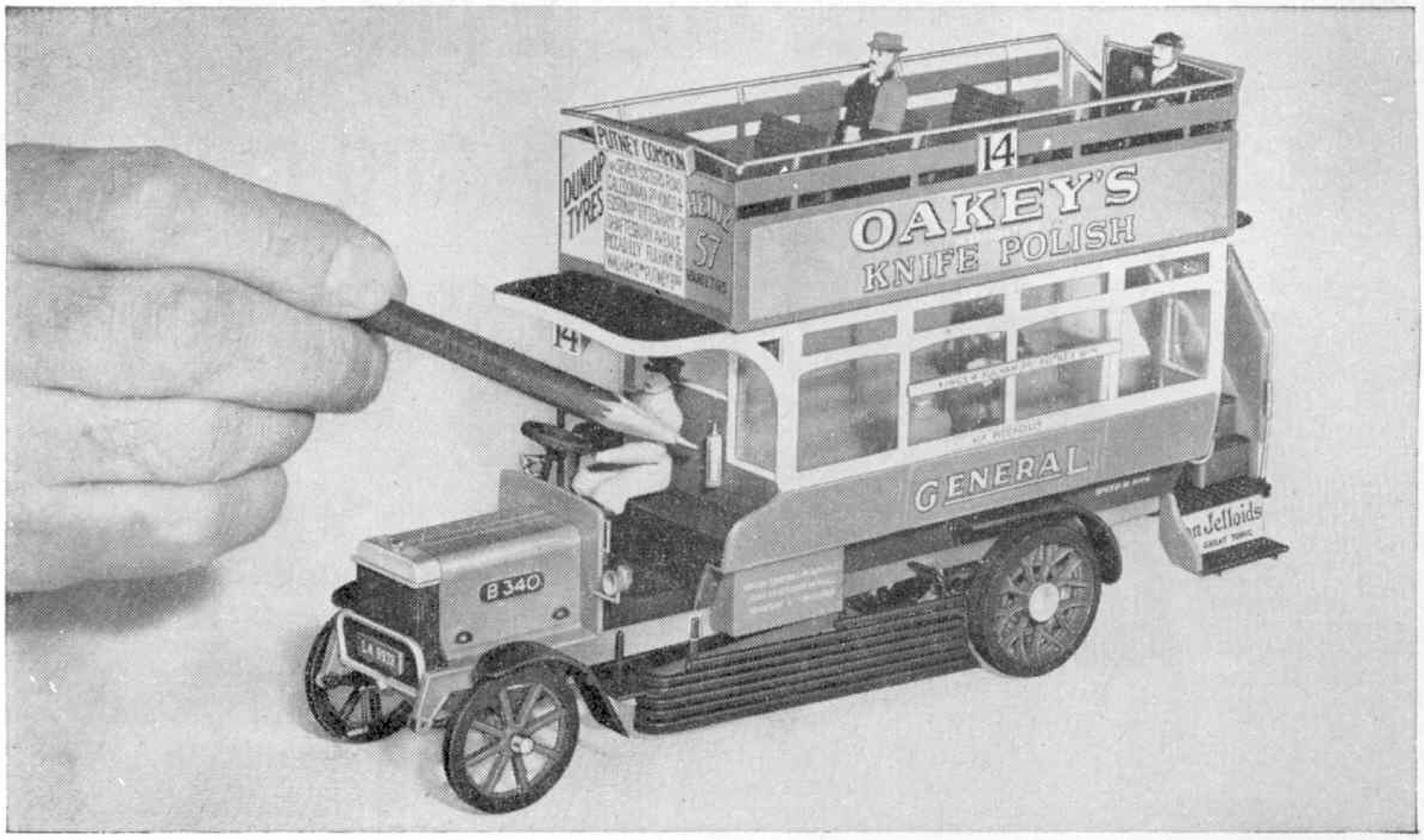

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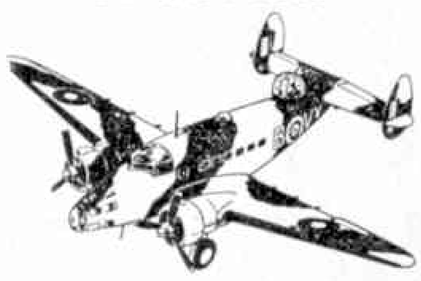

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next month

Sandy Skinner writes about Go-Karting, and Charles Mascall tells the story of that great performer in the wrestling ring, Johnny Kwango. All your favourite hobbies features will be in the April issue, too, so make sure of your copy by ordering now.

The shape of '64

YOU WILL see that for the first time, *Meccano Magazine* is appearing in its new size and style. We have not changed it just for the sake of being different. The larger page size has made it possible to lay out the magazine in a more attractive style, which is much easier to read. We hope you like it.

There are some interesting new features in this issue, but we have kept all the popular regular articles on aviation, railways, shipping and construction. The new features include the 'behind the screen story' of Fireball XL5, on page 8, and an article on singers, Chad Stuart and Jeremy Clyde, on page 12. Champion driver, Jim Clark, is our front cover man. His story is written by Jerry Ames.

We shall, during the coming months, introduce new articles and features—mostly covering model-making and things you can make yourself.

We want to know your views on the new style *Meccano Magazine* and its new features, so write and tell us what you think and what you would like to see in future issues. Our aim is to make sure that your magazine includes the features you want and so we are always interested to hear from you.

by **Jerry Ames**

This page: The victor's laurels for Jim Clark on winning the 1963 Dutch Grand Prix at Zandvoort.

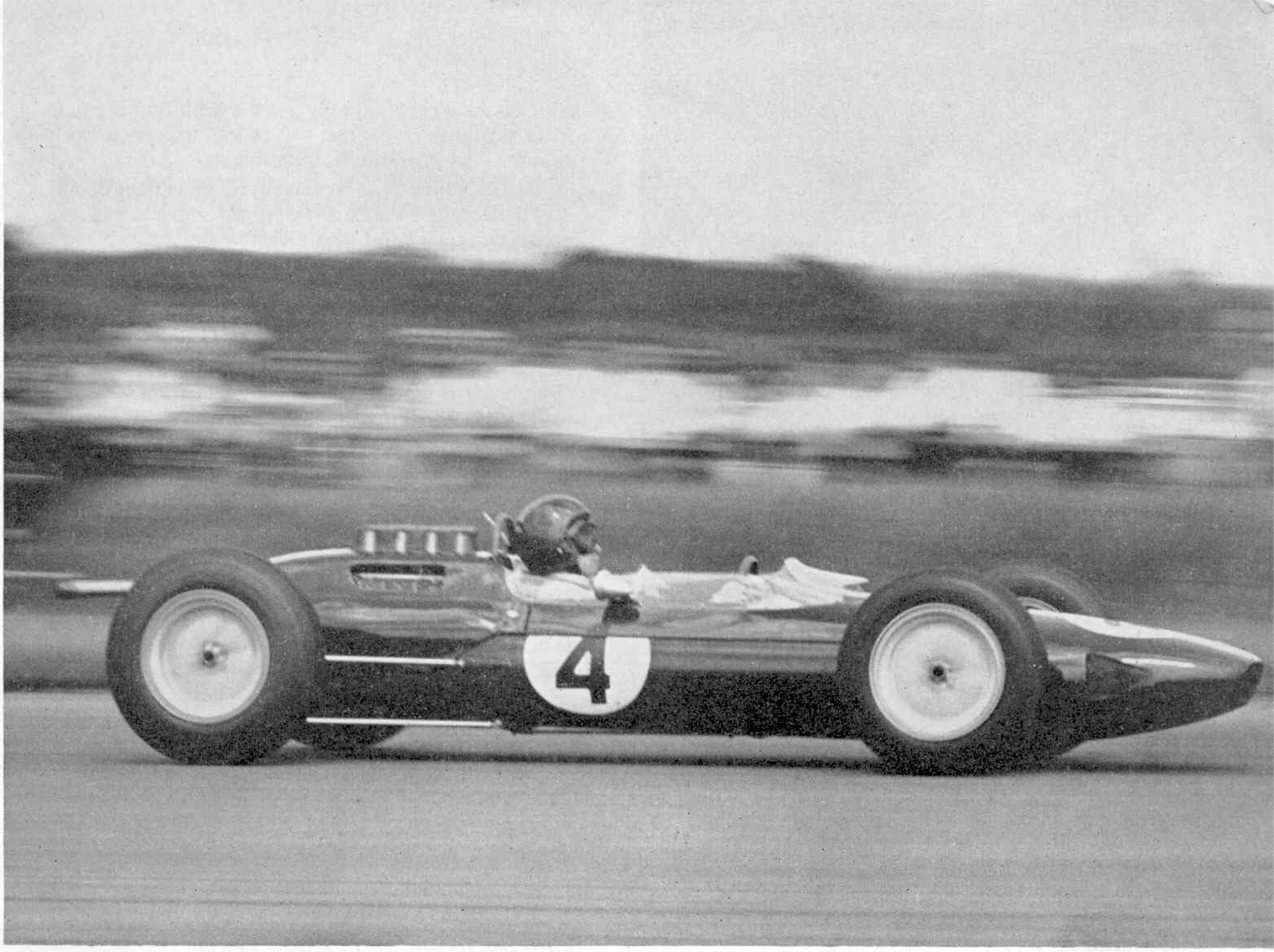
Opposite: The landscape becomes a featureless blur as Jim hurtles round the Silverstone circuit during last year's British Grand Prix.

The man who makes

MEET JIM CLARK, the World Champion, a cheery little Scot from just over the border, who stands 5 ft 8 in in his socks. Small, may be, but he packs a big punch into his driving which has taken him to the top of the motor racing tree in record time.

There is often much talk about natural drivers, but believe me they are very rare; Nuvolari was one, so was Fangio, you can say the same about Moss and Hawthorn, Jim Clark certainly is a natural, to prove it he has won more *grandes epreuves* in a single season than did any of these other great drivers at the height of their fame. But having a natural aptitude for driving, plus sensitive fingers to feel a car at high speeds, are only part of Jim's racing make-up. He has a quick eye and instantaneous reactions. Long before danger would become apparent to the average driver, Jim instinctively senses trouble and every fibre in his body is alerted.

The picture on the front cover of the magazine shows the Champion concentrating on the healthy note of that engine as his mechanics tune it up.



the right decisions

Maybe ahead of him a car is taking a peculiar line through a corner, or there may be a faint haze of settling dust across a hedge, small signs that could give just a hint of someone in difficulty. They could spell disaster as Jim flings his Lotus at speed through corner after corner.

Having been warned by the merest hint of danger, the next thing is quick reaction and a firm decision to take the safest course, as he rounds a corner perhaps to be confronted by a spinning car.

Jim has a natural aptitude for making the right decision in motor racing, so he rarely spins off or makes a mistake on a circuit these days, but this is where experience plus ability counts and that experience started way back in his club racing days, which is why he regards his earlier training in small races as invaluable.

Today, Jim Clark prefers Formula One Grand Prix racing, because it is the ultimate and most highly developed form of high speed motoring; besides one can get a better balance, and steer modern single seater racing cars more accurately than sports cars, providing you know how. Then again, in the top Grandes Prix he is racing against friends and knows their ability, also, just what their reactions are likely to be if something happens. This makes the highest form of racing safer and Jim finds it more exhilarating.

Driving in a modern race is often a battle of wits and as Jim is quick witted, he can frequently out-manoeuvre and swoop past an unsuspecting rival with only inches to spare. Although Jim is not normally the worrying kind, one thing that can upset him is an untested car or component; he is a great believer in the old racing adage, 'the part that hasn't been tested is the part that will give trouble in a race.' That is why last season he preferred

to pin his faith in an older, five speed gearbox for race after race, rather than switch to a later six speed box that might have proved less reliable, but given him other advantages.

His reasoning was correct, for it enabled him to win seven out of ten *grandes epreuves*, something no man has ever done before.

I asked him which was the race he enjoyed most. Without question he named the Italian Grand Prix at Monza in September, because he really had to fight hard for his victory and it was more fun, as he was battling against Ferrari on their home ground. Jim loves a real race that brings out his fighting spirit. In his opinion a victory should be hard won to gain the maximum enjoyment.

He is never a man to underrate the opposition. 'I reckon John Surtees in the new Ferrari will give us all a run for our money in the coming season,' he told me. 'The Ferrari has been getting faster and faster, and with the new Italian V-8 and V-12 engines under development they should take some holding if they prove reliable.' So this season there could be a battle royal between Jim Clark and John Surtees, but the lighter weight Brabhams and Graham Hill in the revised BRM could spring some surprises.

James Clark was born on March 4th 1936; he is the only son of a wealthy sheep farmer, but has four elder sisters who made a point of keeping him in order when young. They are married now, but Jim is still a bachelor. I wonder how long this state of affairs will continue, however. *She* is very, very charming and attractive. Keen on motor racing, too.

Jim's father, sensibly, made him learn sheep farming the hard way. Jim knows what it is to be a shepherd and in charge of many valuable pedigree sheep. When he retires from racing, it will be to take a more active interest in farming. He drove his first motor race back in 1956: the car, a DKW saloon, belonged to his friend Ian Scott-Watson, who has done his utmost to further Jim Clark's racing career, but it wasn't until the Dutch Grand Prix of 1960, where he finished a creditable fifth for Colin Chapman, that he had his first go in a major Grand Prix and really got his teeth into big time racing, starting a career that was to lead to every driver's ambition—the World Championship.

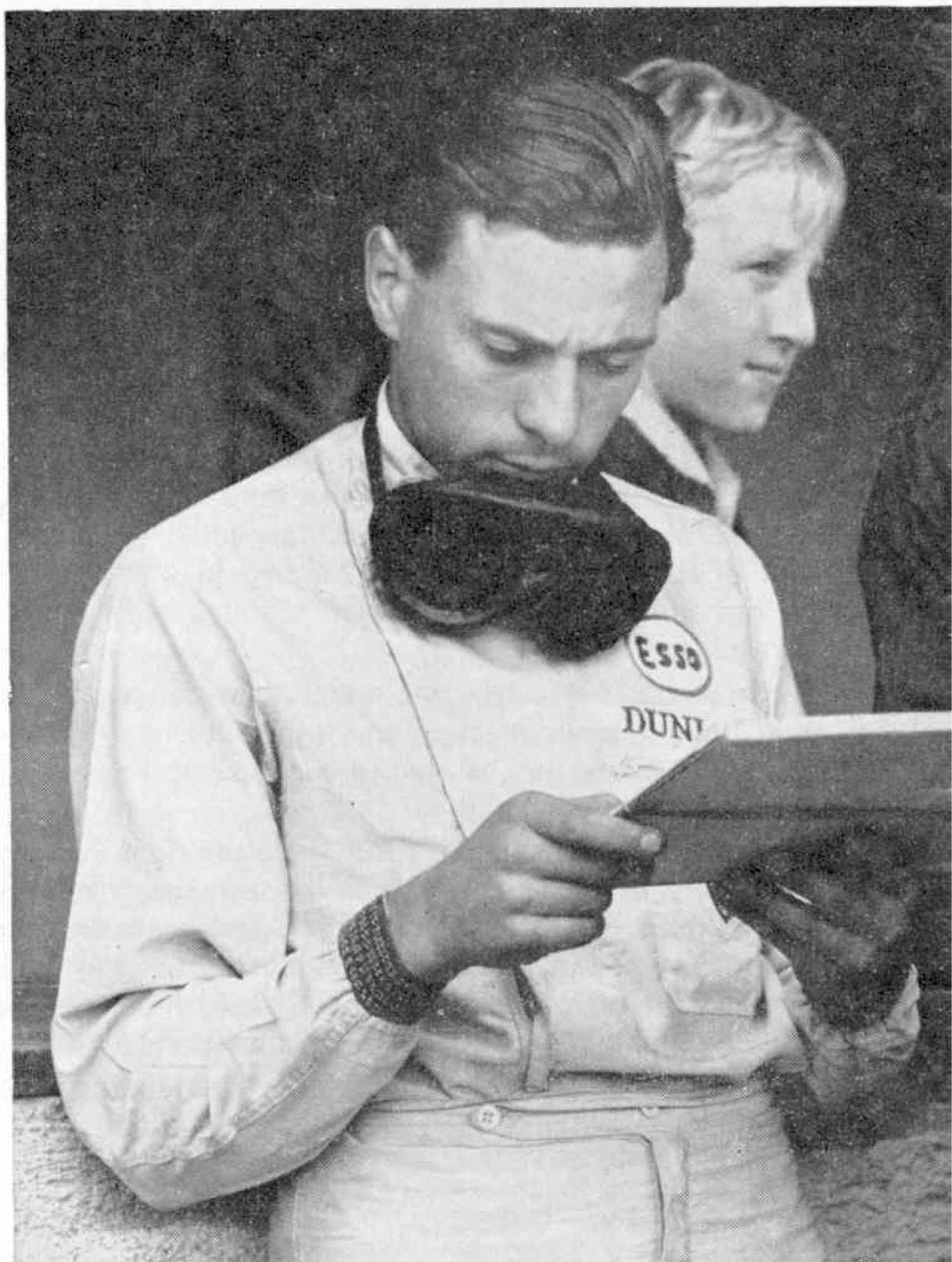
Not all Jim's time is spent racing; he sometimes does a bit of testing, helping to develop new models. I have just been driving the Lotus Cortina, Colin Chapman's special version of the Ford Cortina, in which Jim Clark played such a valuable part during the prototype stage.

The Lotus Cortina has a twin overhead camshaft 1558 cc Ford engine, enlarged and modified by Colin Chapman, to give 105 bhp. With it goes a top speed of 107 mph. It is delightfully quick, going from standstill to 50 mph in 7 secs and to 80 mph in 17½ secs; in traffic it is necessary to make frequent use of the excellent gearbox as the car is highly geared. Fuel consumption lies between 20 and 23 mpg. Steering is superb, while handling is a vast improvement on standard Ford. The rear axle makes use of special 'A' brackets and trailing arms which enable the car to transmit its extra power to the rear wheels without much axle bounce.

If you fancy a quick saloon, this is it, but remember it was Jim Clark, World Champion Driver, who helped to lick it into shape.

Top left: This time Jim and the Lotus at Reims. Notice that pout as the Champion takes the bend. This is a characteristic expression of Jim Clark's when he is concentrating hardest.

Below: Checking lap times in the pits.



SOCCER SKILLS

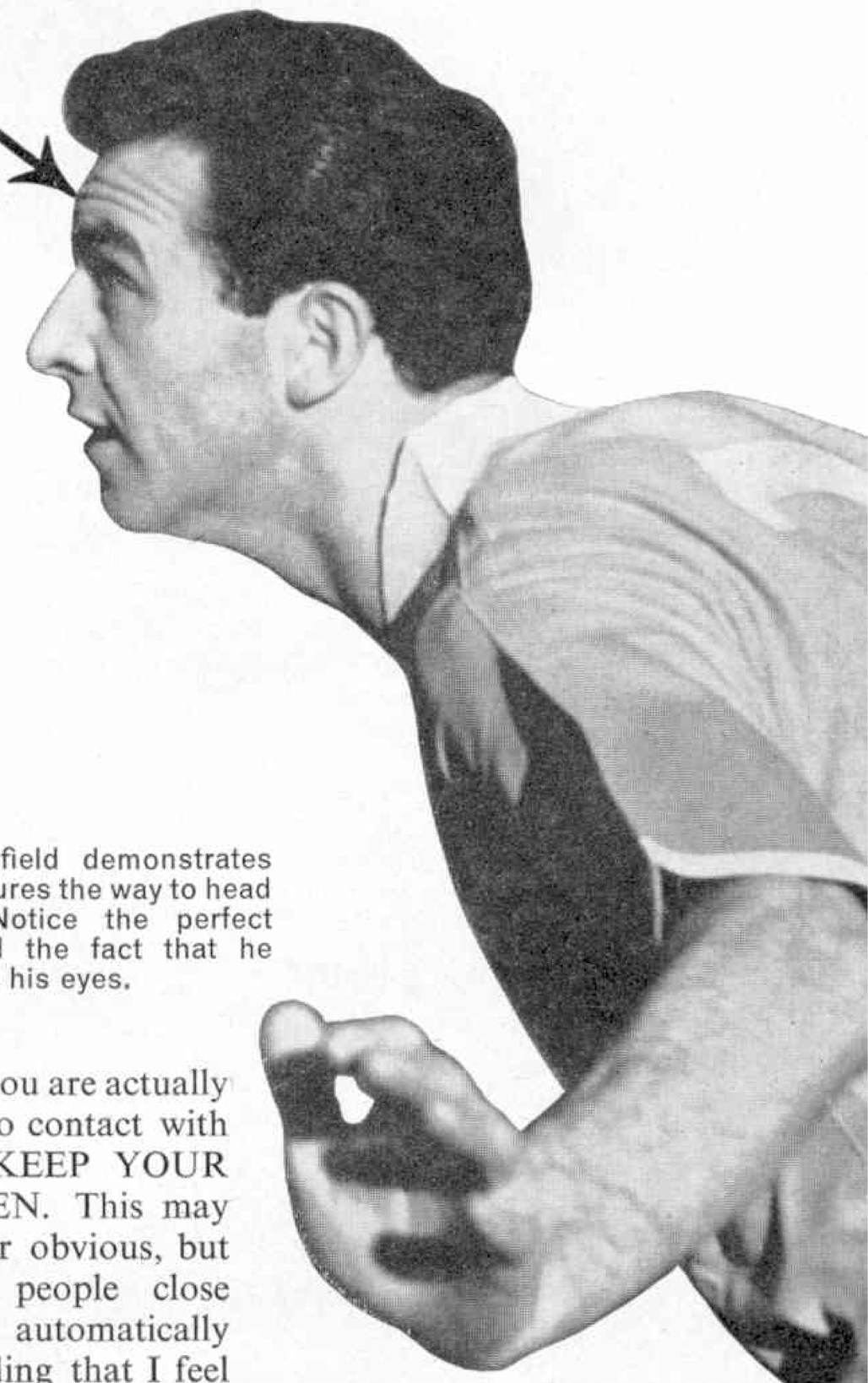
By Jimmy Armfield, England International Full-Back

IF YOU listen to football followers who were watching the game before the last war, you will probably hear them say that there is one skill that is not performed as well as it was in those days. That skill is heading. Whether, in fact, their thoughts or beliefs are true I cannot say, but as so many have stood by these convictions then we can at least say that the old professional footballer could certainly head a ball as well as his present-day counterpart.

Such names as Tommy Lawton, Dixie Dean, and Stan Mortensen come to my mind when I think about the many former players who were as good with their heads as many players are with their feet. But even today such players as Alec Young, Cliff Jones and Denis Law come to mind when one thinks about good headers of a ball.

Many of you who are reading this series will already be thinking to yourself, 'Oh! I'll never be able to head a ball like that.' I know how your thoughts will run because that is just how I was thinking when I was your age. But helping yourself to learn heading is accomplished by one means only—practice. Of course, you have to practise in the correct manner and so here are a few tips for you.

(1) Always try to take the ball on your forehead, and not on the top of your head. First of all it is more accurate and, of course, it is less painful. I know many young boys don't like heading and naturally, as a youngster, you have an initial fear of letting a ball descend on your head. But to break this fear you have to keep on heading and so get yourself used to the idea of it.



Jimmy Armfield demonstrates in these pictures the way to head the ball. Notice the perfect balance and the fact that he never closes his eyes.

(2) When you are actually coming into contact with the ball—KEEP YOUR EYES OPEN. This may seem rather obvious, but so many people close their eyes automatically when heading that I feel the point is worth stressing. If you do close your eyes, even though it may be only for a second, you will lose sight of the ball and more often than not you will find you will always misplace it.

(3) Always try to head to advantage, even in the early stages of practice. By this I mean that you should always try to place the ball accurately to a given spot, and, what is more, in a manner where it is to advantage. In other words, you should learn to place the ball at someone else's feet, or if it is a header on goal, then it must be hard and direct.

Our first picture this month shows a close up of me heading the ball while I am on the ground. The idea is to show the ball just after it has left my forehead. You can see that it has done this and I want you to note that I am still perfectly balanced. In the second picture I really had to jump to get at the ball. The picture was taken just after I had made contact with it and you will see that I have used my hands to keep my balance.

Above: Venus, doctor of space medicine, and Steve Zodiac's constant companion.

Opposite page, top: Fireball XL5 during one of its short stays at Space City.

Bottom: Landfall on an unknown planet. What perils await the Fireball's crew on this new world?

UNIVERSE IN miniature

the behind-the-scenes story of Fireball XL5

by David Bennett

'OK, VENUS?' 'OK, Steve.' The mighty rockets begin to roar. The sleek, shining body of the spaceship plunges forward, gathering speed and belching vapour as it surges up the launching track. The boosters give a final blast and Fireball XL5 is slicing through the atmosphere and out into space, on its way to another adventure in Sector 25 of the universe beyond the solar system. This is how 'Fireball XL5' appears on the screen: vital, realistic and enthralling. But what is the behind-the-scenes story of this fascinating, internationally-famous television space series?

Its heroes (and villains, come to that) are, of course, puppets—but not ordinary ones for they are electronically controlled. Their heads are made of fibreglass and contain solenoid cells which automatically control their lip movements as they react to the vocal pitches of the human voices speaking the words. Each voice, which is pre-recorded, is wired to the respective puppet 'actor' and is played back via the control room.

Star of the series is Steve Zodiac, the blonde, virile and handsome captain of the spacecraft. His voice is provided by Hollywood actor Paul Maxwell, who has starred in many popular TV shows such as 'Danger Man', 'Ghost Squad', 'Alfred Hitchcock Presents', and 'Harbor Command'.

Also on board the spaceship is an attractive blonde girl called Venus, who accompanies Steve on his explorations and adventures. She is a doctor of space medicine and has her own laboratory in the craft. Responsible for her fascinating continental voice and other female parts is Sylvia Anderson, who is the producer's wife.

The voice of Professor Matthew Matic, the navigation mathematics expert on XL5, and of Lieutenant 90 of Space City are contributed by David Graham. John Blathel (Fagin of Lionel Bart's 'Oliver') is the voice of Commander Zero, the man in charge of Space City, base of the World Space Patrol fleet.

Robert the Robot, another regular character, has no 'human' voice. He is a transparent mechanical man and automatic pilot of the spaceship. He has one eccentricity: if his orders are changed or if anything goes wrong, he literally gets steamed up—the steam is set off electronically from his head.

The 'Fireball XL5' films, each half-an-hour in length, are made by AP films at their studios at Slough. Because of the out-of-this-world techniques involved, a special effects studio, manned by a skilled crew of experts in this

field of film making, had to be added to the existing studio.

This studio within a studio is complete in every detail. It was here that the unique scenes required for making the first-ever puppet series dealing with life in outer space a hundred years hence were constructed and shot. Here that Space City—complete with revolving sky-scraper, enormous control tower, laboratories and equipment for propelling the ships into space—was built, enabling dramatic close-ups to be shot of the spaceships being fired from their rocket bases and returning safely to land. Here that the model makers created the numerous planets that have featured in the series, with their unusual surfaces shown in minutest detail. Here that every type of special effects procedure, from special planet atmospheric conditions to explosions in miniature, was carried out.

The AP studios are probably the most advanced puppet film studios in the world. The producers had the advantage of the research that went into the making of 'Fireball XL5's' popular predecessor, 'Supercar'. The same basic techniques were used but with many improvements.

One of the major problems of filming puppets is that, because of their miniature size compared with human actors, the cameras must be almost at floor angle. This makes it difficult for the director to judge exactly how each shot will appear on the screen. Normal viewfinder methods are quite inadequate.

This is how the 'Fireball XL5' production team overcame this problem. Instead of being on the studio floor as is the case with normal films, the director operated from a control room in which he watched everything on television screens. This TV was on a closed circuit and came direct from the various cameras that were being used.

The director, therefore, worked in much the same way as a television producer, in that he could see on his screens exactly what the cameras were photographing. He communicated to the production crew by means of loudspeakers. There were also monitor screens on the floor and in various parts of the studio so that all concerned could see what was being filmed.

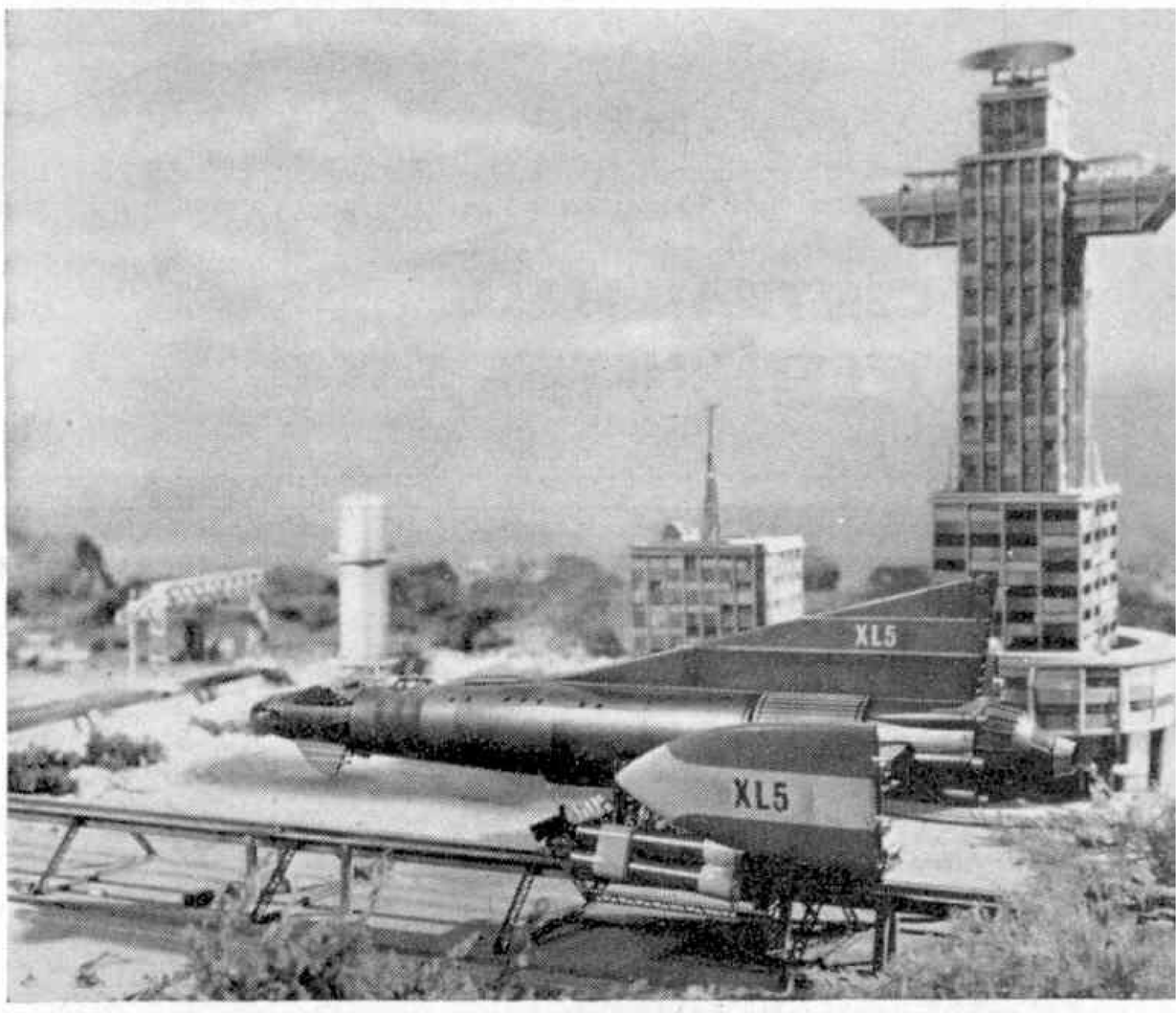
Before each episode went into production, all the dialogue was pre-recorded on magnetic tape. Four channels were used in the control room and as the tape was run through each of them, the lip movements of the puppets, as described earlier, were synchronised electronically.

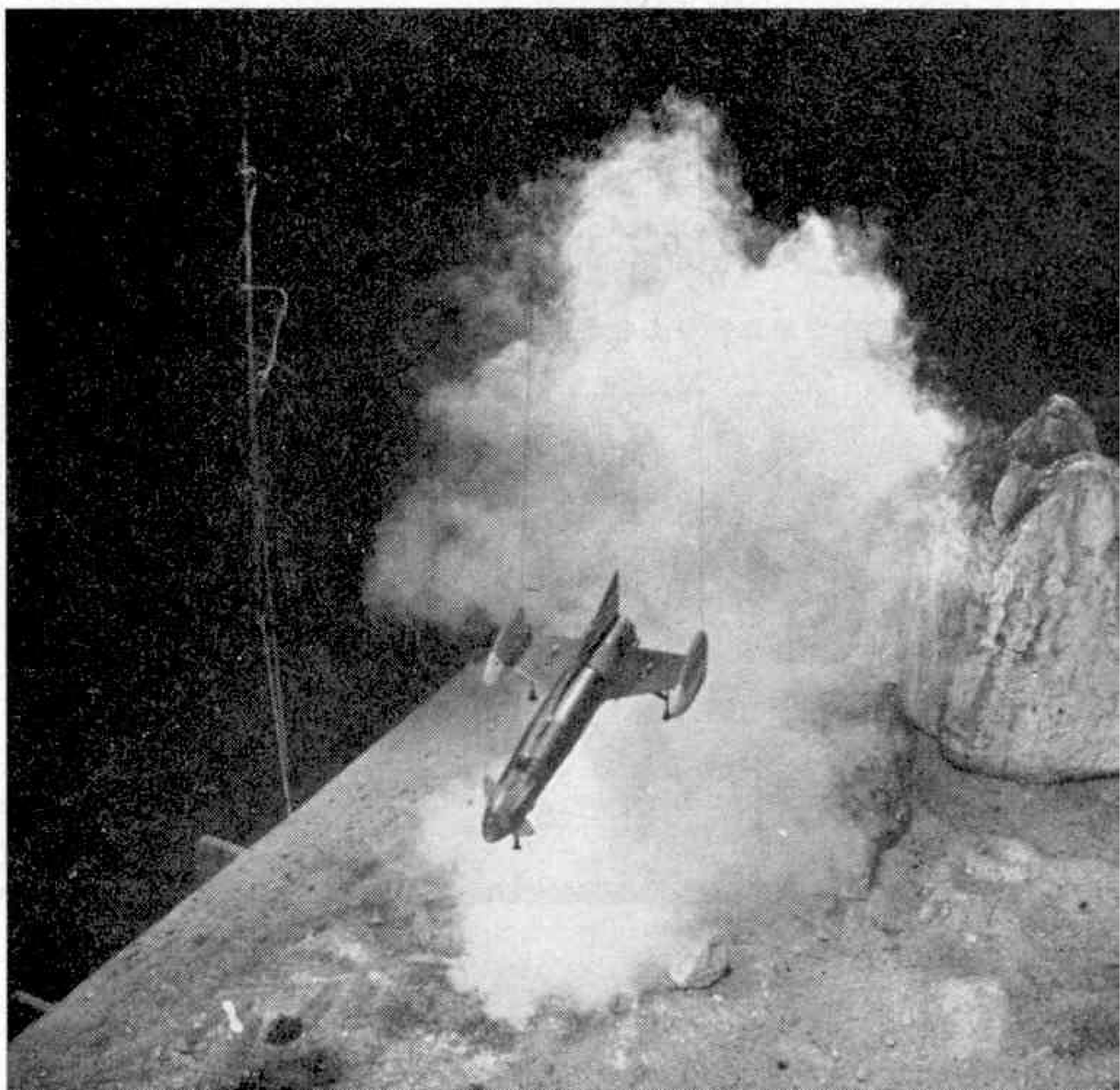
The puppets were actuated by a team of experienced puppeteers who operated from 6 feet high gantries. The average height of the puppets was 20 inches and the wires operating them were so thin—only 5,000th of an inch—that they were almost completely invisible.

Who are the people responsible for creating 'Fireball XL5'? The four founder members of AP Films were Gerry Anderson, the producer and executive head, whose film career had been spent largely in the cutting rooms, and had then become a TV film director and worked on two puppet series on his own account; Reg Hill, the art director and a wizard with special effects, model work and painting; John Read, who began his career in cartoon films and worked on special effects and as a cameraman; and Sylvia Anderson, ex-continuity girl who takes care of the scripts and voice side of the operation.

They began in an old mansion in Maidenhead where they made a pilot film of a puppet series called 'Four Feather Falls'. The series was accepted and so began a whirlwind conversion of a disused factory at Slough into the first all-puppet studio in Britain. All they had was an empty space. They worked days and nights, scarcely stopping to eat ('We could hardly afford to eat, anyway!' they say).

They completed 'Four Feather Falls' and on the strength of this series put up the idea of 'Supercar'. Even in their more optimistic moments, they could scarcely have anticipated that this series would make such a world-wide hit. But it did and the outcome of the success was 'Fireball XL5', their most ambitious project to date.





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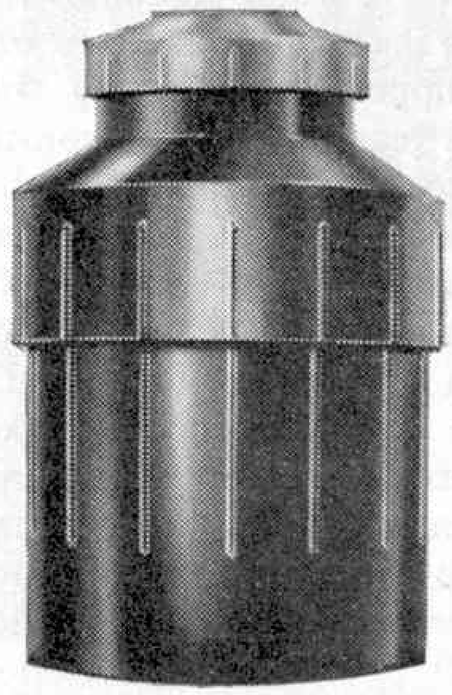

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Anything interesting . . . write about it to the editor

■ *OLD FAITHFUL*—Many readers must share with me happy memories of a dog. They may be interested in this snap of one of Australia's best-loved monuments. It is situated at Gundagai, between Melbourne (the old capital) and Canberra (the new). It commemorates the early pioneers who carried all their possessions in a Tucker Box, on which the faithful dog would sit while their masters made this great country. (1)

Neil Hunt, London.

■ *HOME ON WHEELS*—There might seem nothing strange about a sparrow's building a nest in a bicycle basket in a rural garden, but this bike was being left in racks in the heart of the city while the nest was being built.

The picture shows about ten days work on the nest. At that point it had got to the stage when the bird had started shaping the nest with the saliva from its beak. (2)

I. J. Wilkins, Stroud, Gloucestershire.

■ *WORLD'S OLDEST IN WOOD*—Here is a snap of the oldest wooden crane in the world—the Samuel Pepys at Harwich. It was worked by men walking inside big wooden drums in the naval yard established by Cromwell. It was often visited by Pepys, when he was Secretary to the Navy in the time of Charles II. This crane must have placed supplies on the *Mayflower*, which was built there. (3)

Leslie Hunt, Leigh on Sea, Essex.

■ I like the MECCANO MAGAZINE, but I would like to see Fireside Fun back again. I like the bits about preserving old engines, and I would like an occasional article about chess.

Michael Laslett, Wimbledon.

Thank you, Michael, for your suggestions. We certainly are planning a regular cartoon feature to take the place of Fireside Fun. As for the chess articles and the stories you want, if we find more people who share your tastes, you may depend we shall take up your suggestions.—Editor.

■ *YOU CAN'T PLEASE EVERYBODY*—As a regular reader of MECCANO MAGAZINE, I think that to add pages about clothes, and pop artists and TV personalities would change a good magazine into a third rate one. I would also like to see the page of jokes back again, too. The cover is very nice as it is, so leave it alone.

Jonathan Nutman, Stocklinch, Ilminster, Somerset.

■ . . . *CAN YOU?*—I am glad to see that you are going to liven up MECCANO MAGAZINE. It is very interesting, but it is dull to look at. I like motor racing more than trains, so can we have some more about cars and less about railways, please? I think it's a good idea to have articles about recording stars and TV people, because you can't help wanting to know about them.

Jeremy Paterson, Canterbury

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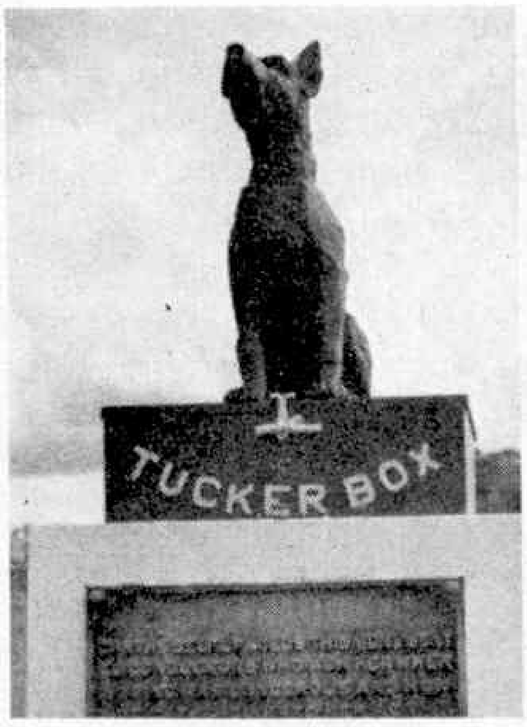

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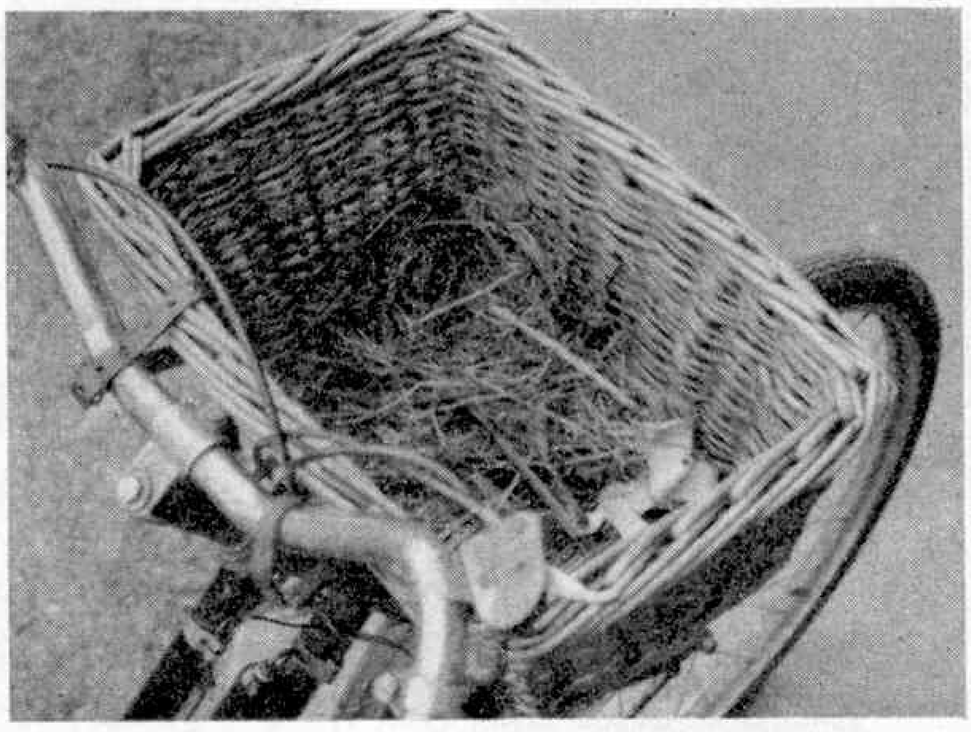

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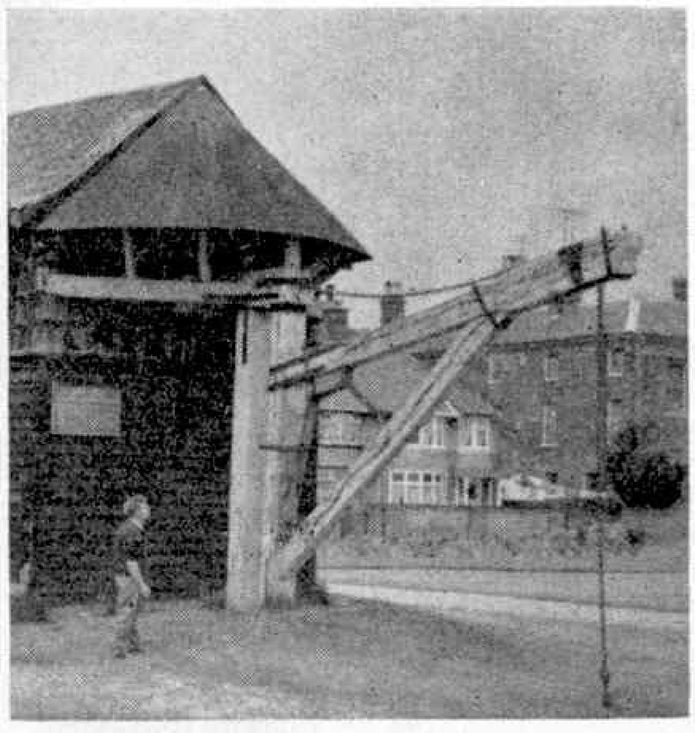

yesterday's gone

Definitely not for screamagers. As most of us are a bit fed up with that screaming and shrieking which seems to be just as much a part of the Mersey sound as the twang of electric guitars, we are glad to introduce two youngsters whose relaxed, easy style makes it worthwhile keeping quiet and actually listening . . . .

CHAD STUART and Jeremy Clyde (Chad is the one with the glasses) met at drama school. Last summer they were playing and singing together in a Mayfair coffee bar, when Tony Lewis, the artists' manager, was asked to go and listen to them. After hearing one session he signed them up immediately and took them to his friend John Barry of Ember Records. The result was *Yesterday's Gone*, Chad's own composition, which entered the charts a month or two back.

Both Chad and Jeremy are 21, and their hobbies are record collecting and folk-singing. Jeremy, who was born in Dorney, Buckinghamshire, was educated at Eton and at Grenoble. He trained for drama at the Central School, London, during which time he played in a rock group. But acting came first. He did a season at the open-air theatre in Regent's Park, followed by nine months' repertory in Dundee. He is the son of film producer, Thomas Clyde.

By the way, Jeremy's first public engagement was as a page boy at the Queen's Coronation on June 2, 1953.

Chad Stuart was born in the Lake District and was educated at Durham and at the Sorbonne. He is the more experienced musician of the two and started work in Feldman's Music House as a copyist, and then as a junior arranger. He worked with several groups in his spare time.

Their latest record, *As I love you today*, was specially composed for them by Russell Alquist, Juliet Mills's husband. The flip side is the traditional *Early in the morning*; both numbers are sung in that easy-beat, relaxed style that made *Yesterday's Gone* and the *Lemon Tree* such a contrast to the prevailing Mersey sound.

Tony Lewis—he also discovered and set Danny Williams on the road to success—prophesies great things for these two boys, especially as a great number of their fans are young people, in, or just out of, school.

Entertainment personality next month is Harry H. Corbett, the younger Steptoe of the BBC series, whose story is told by David Bennett.

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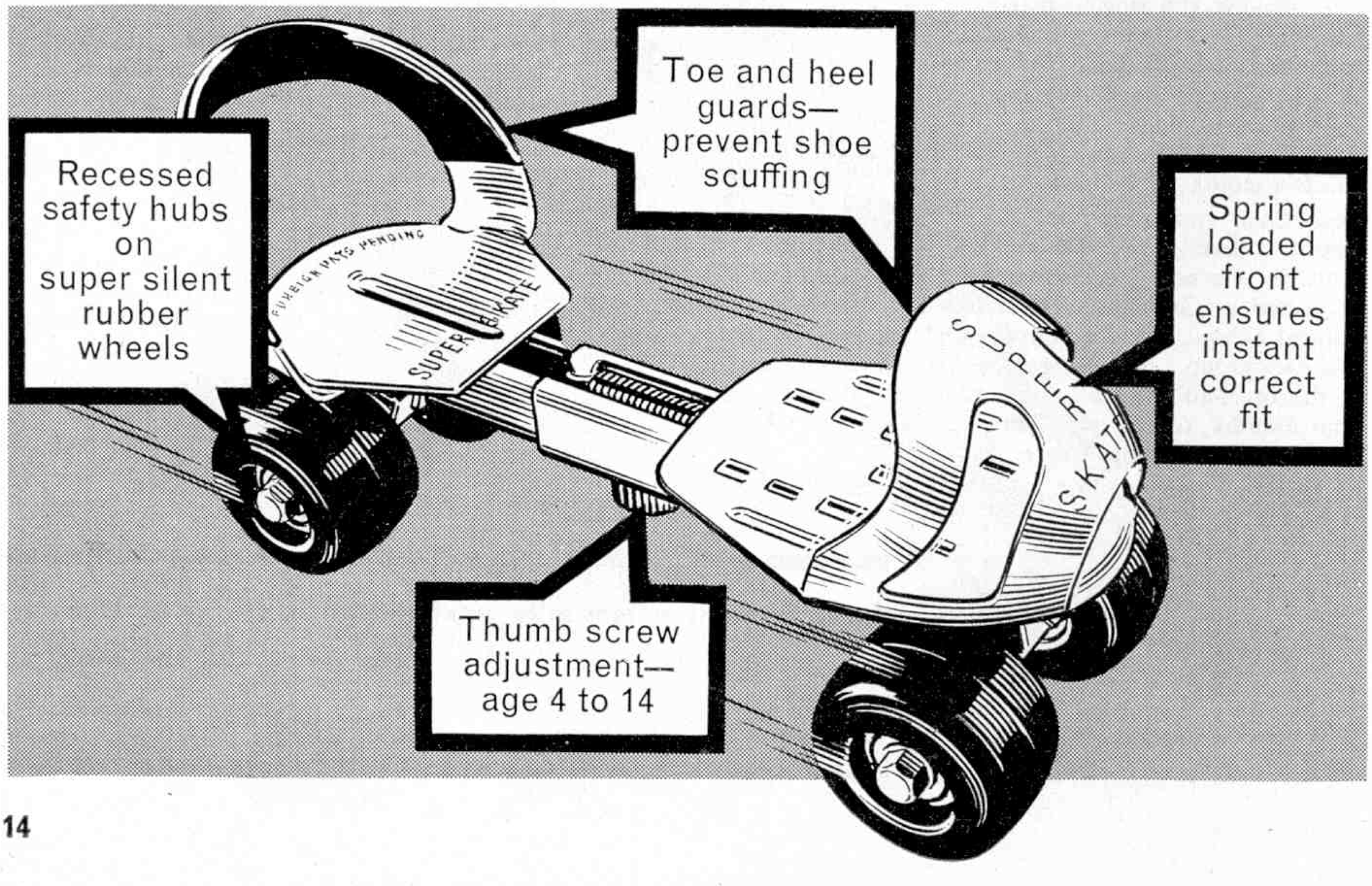
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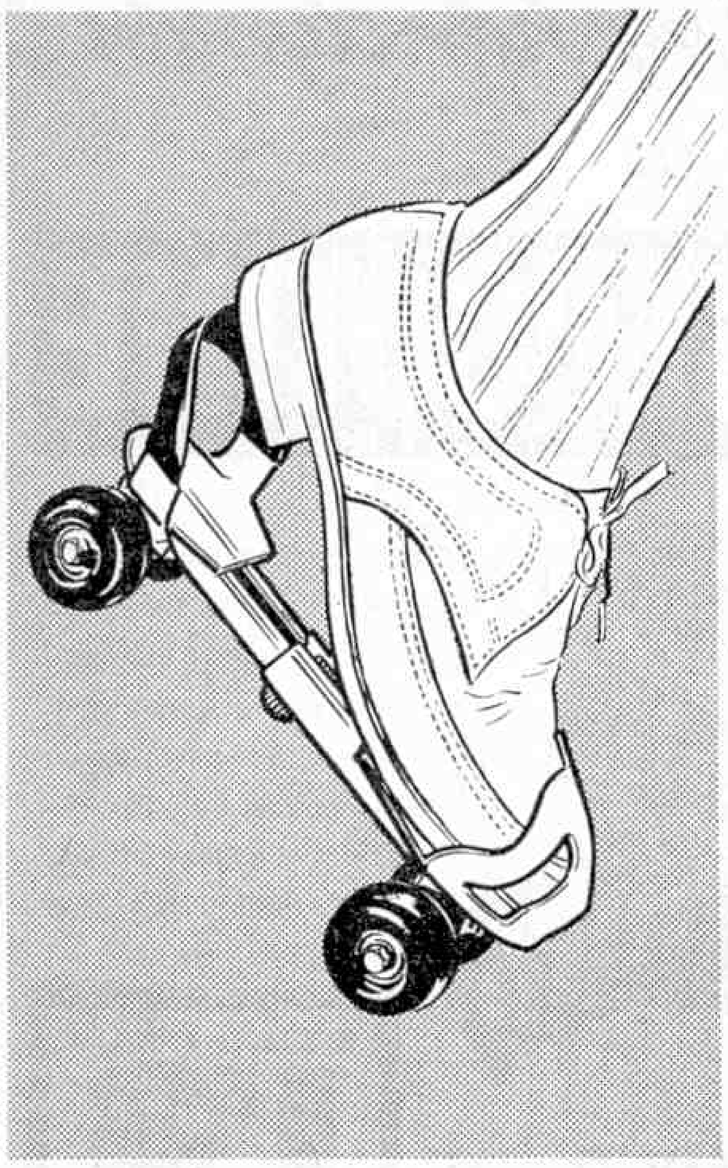

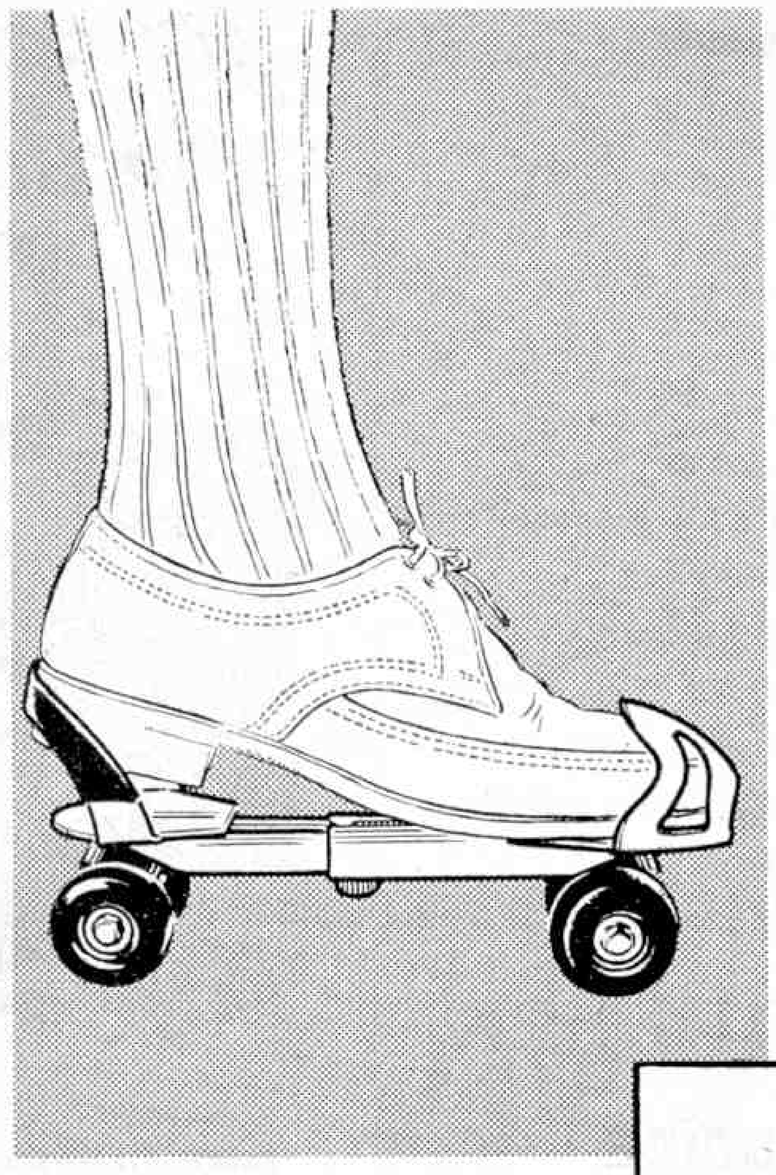

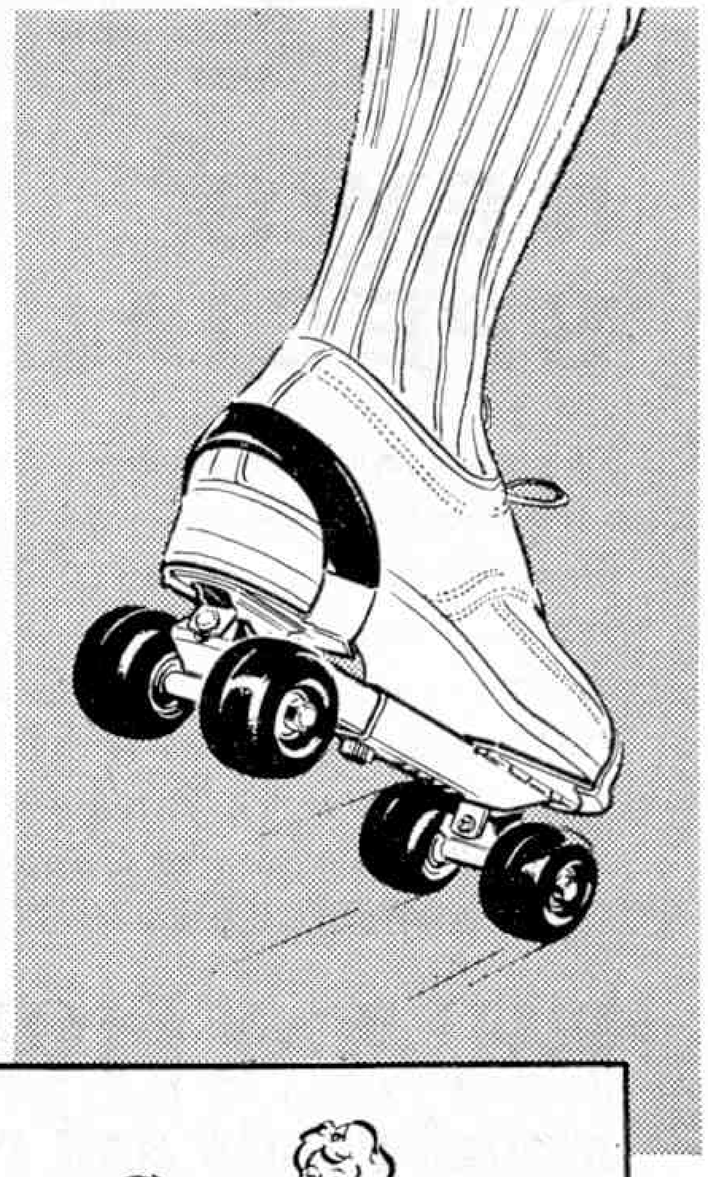

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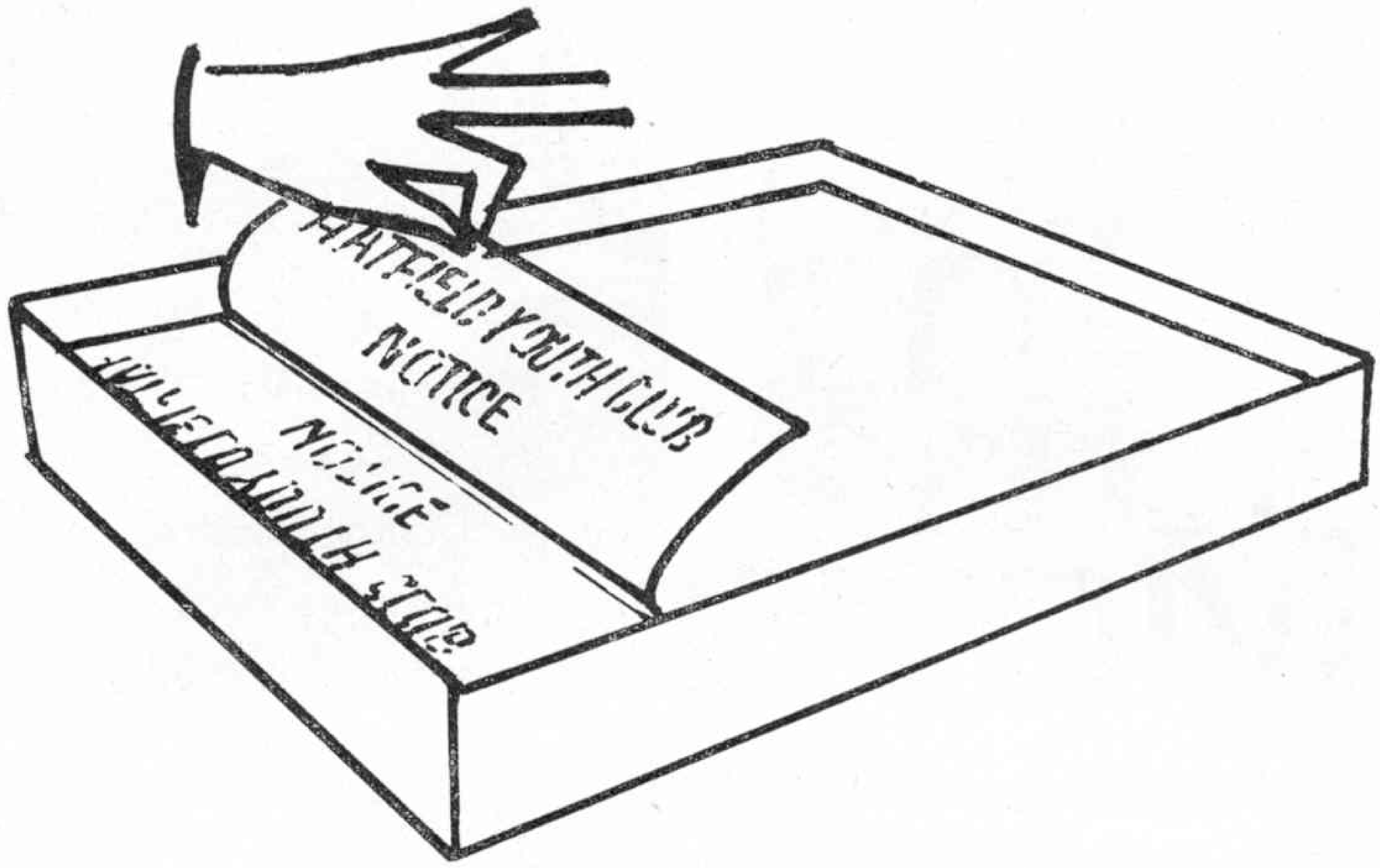


be your own printer

MAYBE YOU want to send notices out to members of your boys' or hobbies club. May be you have school or form newspaper, the one laboriously handwritten copy of which is falling to pieces before it has been read by half the people for whom it is intended. Or maybe you just like the idea of printing.

Whatever the reason, you will find that by making this hectograph you will be able to make more than 100 copies from one original. Moreover, you will make them cheaply and simply.

You will need a shallow metal baking tin. If you are offered an old one at home, you must make sure that the reason you are being given it is not because it leaks. If it does leak at the corners it is of no more use to you than it is in the kitchen.

An ironmonger will be able to sell you a couple of ounces of pale gelatine glue. This you soak in cold water until it turns into a jelly. After you have squeezed away surplus water (in a piece of muslin or pudding cloth) put the jelly in an earthenware vessel such as a casserole and pour in half a pint of glycerine. Let it simmer gently in an oven, stirring it occasionally so that it does not burn or stick to the bottom of the casserole. You add a little—no more than a few drops—of oil of cloves when it is thoroughly mixed. Finally, pour the whole mixture into the baking tin, and leave it for half a day to set.

You will be able to buy hectograph ink—it *must* be made from aniline dyes—from any well-equipped stationer. It costs about half-a-crown a bottle and comes in all colours. A word of warning here. These inks are strong stuff, so be careful not to get any of it on your hands or you will find yourself doing overtime with the scrubbing brush.

Write your circular letter or news broadsheet on to a sheet of paper with your aniline ink, and allow to dry. Dampen the jelly with a sponge or soft cloth, and place your original face downwards in the tray, so that the writing comes into contact with the jelly.

Now roll the paper, gently but firmly, and as evenly as possible with a photographic roller.

Peel the paper off and there should be a perfect reverse image of its contents on the hectograph jelly.

Now you are ready to go to press.

Place a clean sheet of paper on the hectograph, roll it, and remove.

Repeat this process until you have made the required number of copies.

All printers have to clean their equipment when they have finished a job. You will have to do the same. Sponge the hectograph jelly until traces of the ink are removed. Place it in the oven to melt, then let it set, ready to be used again.

Two oz of pale gelatine costs about 2s 6d, glycerine about 3s 3d, ink 2s 6d, the roller, about 5s. Get the baking tin free and you can be ready to go to press for 13s 3d.

On the Move

SHIPPING
AIRWAYS
ROAD AND TRACK
RAILWAYS
SPACE TRAVEL

from Portmadoc to Dinas

Michael Rickett

THE WELSH Highland Railway, which connected Portmadoc on the south coast of Caernarvonshire with Dinas Junction, three miles from the town of Caernarvon in the north, a total distance of about 22 miles, was one of the most attractive narrow-gauge railways in North Wales. Its route passed through such well known places as the Aberglaslyn Pass, Beddgelert, Pitts Head, South Snowdon, which is the start of one of the easiest walks to Snowdon summit, and Lake Quellyn, alongside which the line ran, until it terminated at Dinas, near Llanwnda.

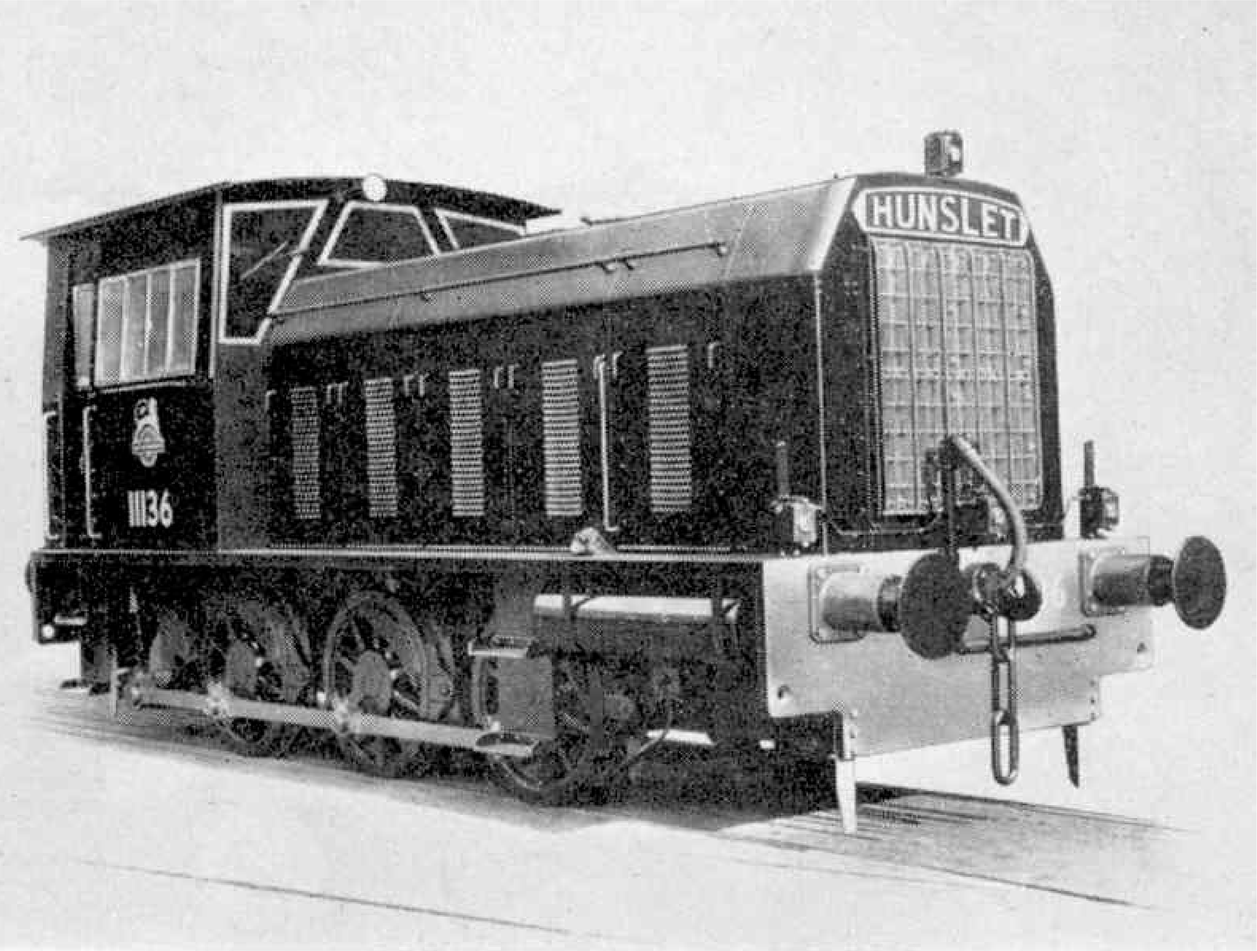
Unlike the other narrow-gauge railways on or near the Welsh coast, which were built primarily for industrial reasons, i.e. the transportation of slate from inland quarries to nearby seaports, during the nineteenth century, the Welsh Highland Railway was built, in its whole eventual length, to serve mainly farming districts in mountainous areas where rail transport was lacking.

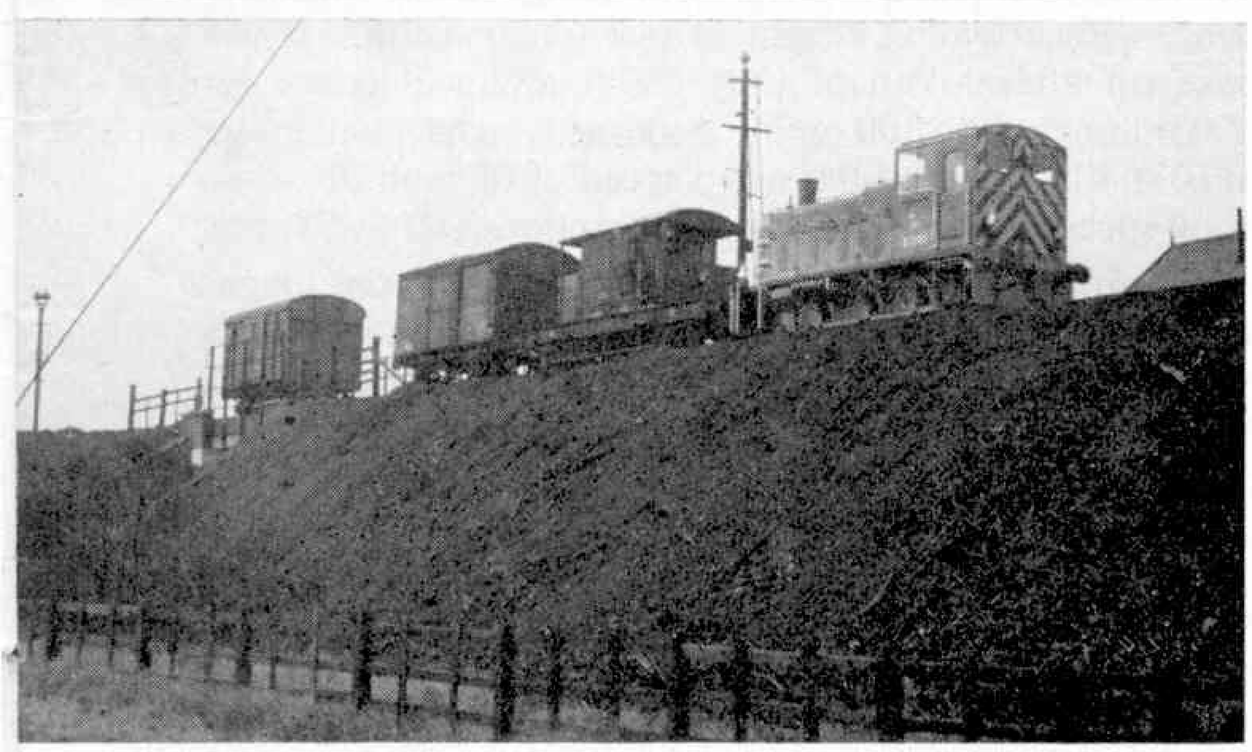
The Welsh Highland Railway Company was formed as a result of a Light Railway Order, made in March 1922, to take over the assets of the former North Wales Narrow Gauge Railways Company, which had been incorporated as long ago as 1872, and the Portmadoc, Beddgelert and South Snowdon Railway. These railways had termini eight miles apart; this meant that a connecting line had to be built between South Snowdon and Croesor Junction, which was on the direct route from Portmadoc to the Croesor Quarries, whose line was utilised for the southern section.

The northern section consisted of the old North Wales Narrow Gauge Railway, which had fallen into disuse by 1916. This section was reconditioned and it also provided two locomotives named *Moel Tryfan* and *Russell*, about eight coaches and numerous slate and other wagons for the newly-formed company, which also purchased an American 2 ft gauge locomotive from the War Department. It was a locomotive built in 1917 by Baldwin's of Philadelphia and known as No. 590, its original W.D. number.

The Welsh Highland Railway was insufficiently advertised and the growing numbers of private cars and motor coaches on the roads took more and more visitors away. It soon found itself having to reduce services, until finally the line was forced to close on June 1, 1937. The decline of the slate industry, the general depression of the early 1930's and the increasing use of road transport for the haulage of goods, all contributed to the death of the Welsh Highland Railway. During this same period the other narrow-gauge railways of North Wales were also affected in varying degrees.

In the case of the Welsh Highland Railway, the locomotives and rolling stock were stored at Dinas Junction, northern terminus of the line, until auctioned in June, 1942. Shortly afterwards the rails were lifted for wartime scrap and other uses towards the war effort. A short length of track near Pitts Head, north of Beddgelert, was kept intact for the Army, who used slate wagons on an incline as moving targets for anti-tank gun training, and this length of track was not lifted until 1948. The locomotive *Moel Tryfan* survived until October 1954 in the works of the nearby Festiniog Railway, where she had lain since being dismantled for repair shortly before the line closed. The Baldwin locomotive No. 590 was cut up on the site of the sale, but *Russell* continued working in the ironstone fields of Oxfordshire for some





Above: 0-6-0 diesel locomotive 116, as built by Hunslet.

Top left: A train load of the specially constructed tank wagons drawn up outside the depot, ready to discharge to oil storage tanks.

Middle left: A1A-A2A diesel locomotive No. D5501 at Stratford.

Bottom left: 0-6-0 diesel locomotive shunting off the hump at Mirfield.

years before being sold to a works in Dorset. In 1954 she was saved from the scrap heap by the Birmingham Locomotive Club, who preserved it at Towyn, in the Talyllyn Railway Museum, where it still remains. The station buildings at Beddgelert were commandeered for, and removed by, the Air Ministry, but the remains of most of the other buildings are still to be seen at the various stations.

Today, a visitor to the Aberglaslyn Pass can see the track-bed of the old railway by glancing towards the opposite side of the river when standing on the road, and the only three tunnels on the line can also be seen. The steel girder bridge which carried the line over the swiftly flowing Afon Glaslyn is partially hidden by trees.

The Welsh Highland Railway Society was formed in June 1961, its object being to relay the track between Beddgelert and Nantmore. There is a real prospect that, given adequate support from the public, it should be possible once again, in the comparatively near future, to ride in an observation carriage behind a steam locomotive on this historic railway route, which is something both young and old alike will enjoy.

One of the more positive aspects in the report on the re-shaping of British Railways is the development of freight movement in train load quantities—a project of particular interest in the North East. Shortly to come into operation is the movement of fuel oil in train loads from the Mobil Oil Company's terminal at Ellesmere Port to a new rail-served oil distribution depot, built by Charrington-Hargreaves Ltd., on land leased from British Railways, at Liversedge, Yorkshire.

Specially constructed tank wagons, each of 27 tons capacity, fully vacuum braked and holding up to 6,500 gallons of fuel oil, will operate this service. The train's pay load will be a maximum of 513 tons. The loaded train travels overnight, and after discharge next day, the empty tanks are returned the same evening.

Charrington-Hargreaves Ltd, a joint undertaking of the Hargreaves Group Ltd, and Charrington, Gardner, Locket and Co Ltd, are the authorised distributors in the north of England for the Mobil Oil Company, Ltd. The distribution depot at Liversedge is equipped with parallel sidings for wagon storage. Oil is pumped electrically from the tank wagons, and passes through service pipes and a system of regulating valves to storage for gas oils totalling approximately 3,000 tons.

The flying motor car ready for take off.

His Car Has Wings

John R. Taylor

TRAFFIC JAMS are so frequent on our roads that most motorists must have wished at some time or other that their cars would sprout wings and fly over the queue of vehicles in front. In the United States, Mr. Moulton B. Taylor, of Longview, Washington, was not content merely to wish. He has designed and built a motor car that can be converted into an aeroplane by one person in five minutes.

If you met Mr. Taylor's Aerocar coming down the road, you would probably consider it no more than a rather unusual little two-seat bubble car. There is certainly little to indicate that it is part of an aeroplane. The 'flight section' that converts it into an aeroplane consists of a pair of wings and a rear fuselage and tail assembly carrying the rear-mounted propeller. Construction is all-metal, except for glass-fibre covering on the fuselage.

Small retractable wheels are built into the wing leading-edges, so that the flight section can be towed behind the car, as shown in the illustration. Alternatively, the flight section can be left at an aerodrome until it is needed.

In the past, flying motor cars have usually been so complicated that they have been difficult to drive and fly, ending up as neither good cars nor good aircraft. The Aerocar is different. Its steering wheel controls the front wheels quite normally on the road but, in the air, becomes part of the flying control system which operates the ailerons and Y-type tail control surfaces.

A single 160 hp Lycoming 0-360 piston-engine, mounted in the rear of the car, drives both the front wheels and the propeller through special fluid drive systems. Steel shot is used as the energy transmitting medium in the 'dry fluid drive' to the propeller and is claimed to eliminate the vibration which one would expect from such a long drive-shaft.

In flying trim, the Aerocar spans 34 ft and is 21 ft 6 in long, with a loaded weight of just under a ton. It will take off after a run of only 600 ft and will cruise for 300 miles at up to 100 mph. As a car it weighs half a ton, is 10 ft 4 in long and has a top speed of 67 mph. Normal road speed when towing the flight section is 40 to 50 mph.

Six Aerocars have been built so far and have logged between them a total of well over 200,000 road miles and 3,500 flying hours. The version illustrated is known as the Aerocar IC. Alternative versions are the Aerocar IA with a 143 hp engine and IB with a 154 hp engine. They have a full Certificate of Airworthiness and Mr. Taylor hopes to begin delivery of production models this year.

Meanwhile, he has begun wind-tunnel tests of an improved Aerocar which sounds very exciting, as the car section resembles an E Type Jaguar and has retractable wheels. Like the present versions, it will be as foolproof as possible, to prevent careless driver-pilots from getting into trouble. For example, the flight section could not decide suddenly to demonstrate its detachability in the air, as the engine will not start until all components have been locked securely in their correct positions.

Lions Loose in Airliner

When an East African Airways clerk, named Jayantilal Champion, opened the cargo hold of an Air Congo airliner at Entebbe Airport, Uganda, he came face to face with a lion. According to the South African magazine, *Wings*, it was only a cub about the size of a large spaniel, but standing a few inches from Mr.

Champion's face it looked fearsome and he wasted no time in slamming the door shut.

Officials of the Game Department discovered that there was not one lion, but two, loose inside the aircraft. The animals were a present to the Umwami of Burundi from the Emperor of Ethiopia, and had managed to chew their way out of their wooden cages during the flight from Addis Ababa.

Although not really dangerous, the cubs were large enough to inflict a nasty bite or scratch. So, rather than delay the aircraft any longer while an attempt was made to lure the escapers back into their cages, it was decided to leave them loose among the baggage for the remainder of the trip to the Congo.

Jet-Age 'Tin Goose'

This year will see the introduction into service of two fine three-jet airliners, the Hawker Siddeley Trident and Boeing 727. With their turbojets clustered at the tail, they will set a new fashion, because engineers have been saying for years that the ideal number of engines for aircraft used on short and medium-length routes is 'more than two and less than four'. However, the Trident and 727 are by no means the first airliners to have three engines. In the background of the picture is the first of 25 Boeing 727s ordered by American Airlines. By its side is one of the famous old Ford Tri-Motors operated by this company's predecessor, American Airways, in the late 'twenties and early 'thirties.

Known usually as the 'Tin Goose', the Ford Tri-Motor was one of the great airliners of history. N9683, the example illustrated, was built in 1929 and was operated for many years by airlines in the United States and South America, including American Airways. It is a Model 5-AT-B Tri-Motor, with 420 hp Pratt and Whitney Wasp engines, span of 77 ft 10 in, length of 49 ft 10 in, and loaded weight of 12,650 lb. When new it could carry 13 passengers for 500 miles at 115 mph. Its jet-age counterpart, the 727, weighs more than eleven times as much and can carry 119 passengers for 1,400 miles at well over 500 mph.

High-Flying Beavers

Two Beaver aircraft of the Army's No. 8 Independent Reconnaissance Flight achieved a spectacular success last autumn when they obtained the best-ever close-up aerial photographs of the crater of 19,340 ft Mount Kilimanjaro, East Africa's highest mountain.

Piloted by Staff Sergeant Tom Driver and Sergeant Ken Barber, the little 450 hp monoplane climbed steadily for an hour to pass above the snow-capped summit. Sergeant Jim Gilbert and Corporal Frank Osgood then took the photographs of Kilimanjaro with new F95 aerial cameras which were issued recently to the Recce Flight.

Despite the temperature of minus eight to ten degrees Centigrade, the Beavers and cameras worked perfectly. By taking advantage of every scrap of updraught from cloud formations, the pilots were able to reach a maximum height of 20,000 ft, which is 2,000 ft above the Beaver's official service ceiling.

Japanese Business 'Plane

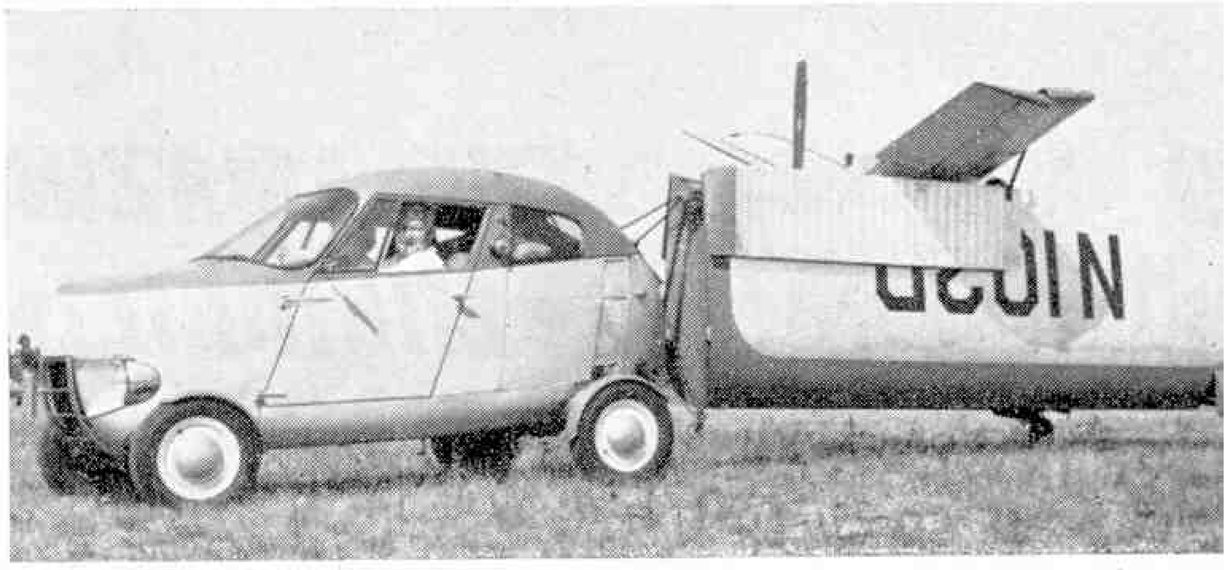
Japan is the latest country to have built and flown a modern turbine-powered business-plane. Illustrated on this page, the Mitsubishi MU-2 has two 562 hp Turbomeca Astazou IIK turboprops and will carry a pilot and six passengers at a cruising speed of 250-325 mph.

The first of two prototypes of the MU-2 flew on September 14, 1963.

Top: Moulton B. Taylor's Aerocar with wings folded.

Centre: The new Mitsubishi, Japan's turbine powered business plane.

Bottom: The "tin goose" overshadowed by its jet-age counterpart.



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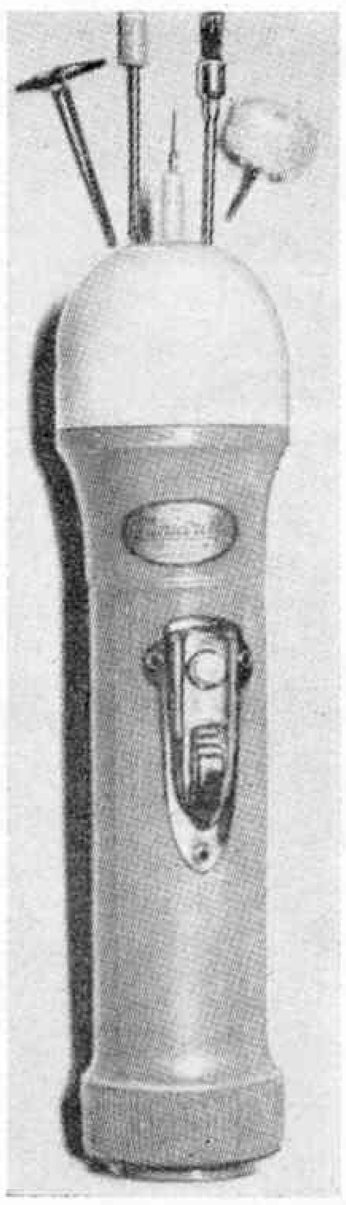

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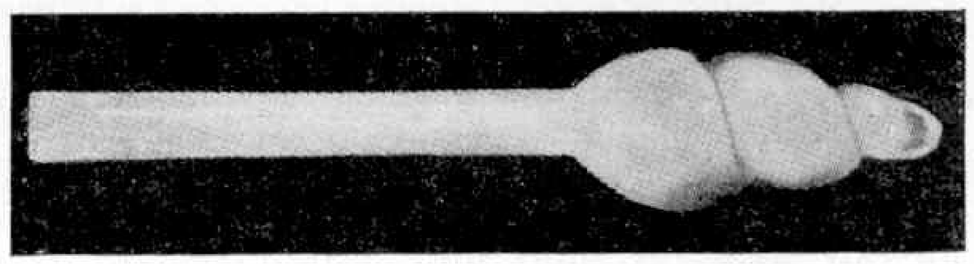

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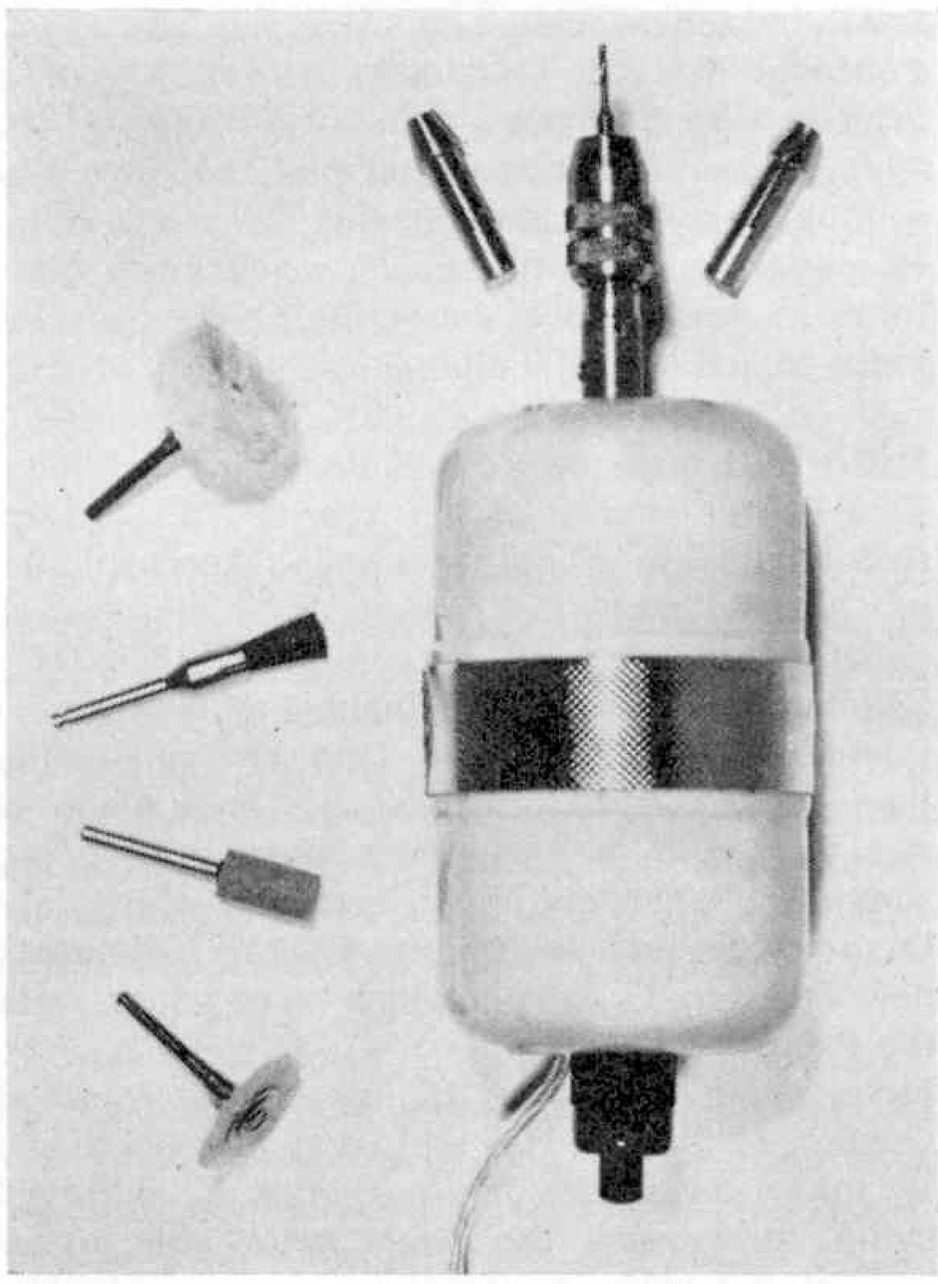

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One of the Thames tugs, the SUN XX, seen from the air.

The tugs METINDA III and SALVEDA towing the fore-part of a tanker.

TUGS

LITTLE SHIPS & BIG SISTERS

Robert Gore

THEY MAY be in a group assisting some giant Atlantic liner into her berth at New York or there may be one or two manoeuvring a small coaster to a mooring in the confined but busy waters of the port of Seaham Harbour on our north-east coast. Ocean-going versions may be operating on the high seas, far away from land, where they must remain for considerable periods of time. In a way these little ships are rather like a 'big sister' who looks after her even bigger sisters from birth to death, always on hand to guide her on to the right route and there to give her help in times of trouble.

Towing is the primary object of tugs with, perhaps, the exception of the 'pusher' types that are usually associated with the larger and wider rivers, for example in the United States where they can be seen pushing before them a bunch of barges.

We already know that diesel engines are replacing steam for power in ships, and tugs are no exception. Even so, the majority still have funnels, real or false, but the Dover Harbour Board's modern tugs *Diligent* and *Dominant* do not have a funnel as their engine exhaust gases are emitted through pipes which have been cleverly incorporated in the after-legs of their tripod masts. Some of the smallest tugs, like the esturial, dock, canal or river types, have low superstructures and a short exhaust pipe whereas the older steam-powered vessels have a tall and narrow hinged smoke stack that can be lowered when necessary to pass beneath bridges. The masts are fitted in tabernacles so that these too may be lowered and raised at will.

To the uninitiated, the work of towing may appear to be comparatively simple but, in fact, it is not. It requires considerable experience and skill to become a successful tugmaster. Although tough and sturdy, by incorrect handling a tug can easily be pulled over or run down by one of the huge ships she may be assisting.

A tug is of necessity extremely strong in construction for she may come in for much hard and dangerous work. Apart from the ocean-going salvage class which have more hull above the waterline to give protection from heavy seas, tugs sit extremely low in the water with the greater part of their bulk below the surface. In order to provide a clear working and towing space means that the bridge has to be located well forward. It is very important that the navigating bridge should give as near to a 360 degree angle of observation as is practicable and this requirement is almost obtained in the *Diligent* and *Dominant* mentioned above. In the case of a ship-handling tug the tugmaster should have an unobstructed view aft as this is equally important, if not more so, than the ability to have a good one forward, for he must closely watch the behaviour of his charge astern, instructions from the pilot of the larger vessel together with the actions of other attending tugs and his own safety, all at one and the same time.

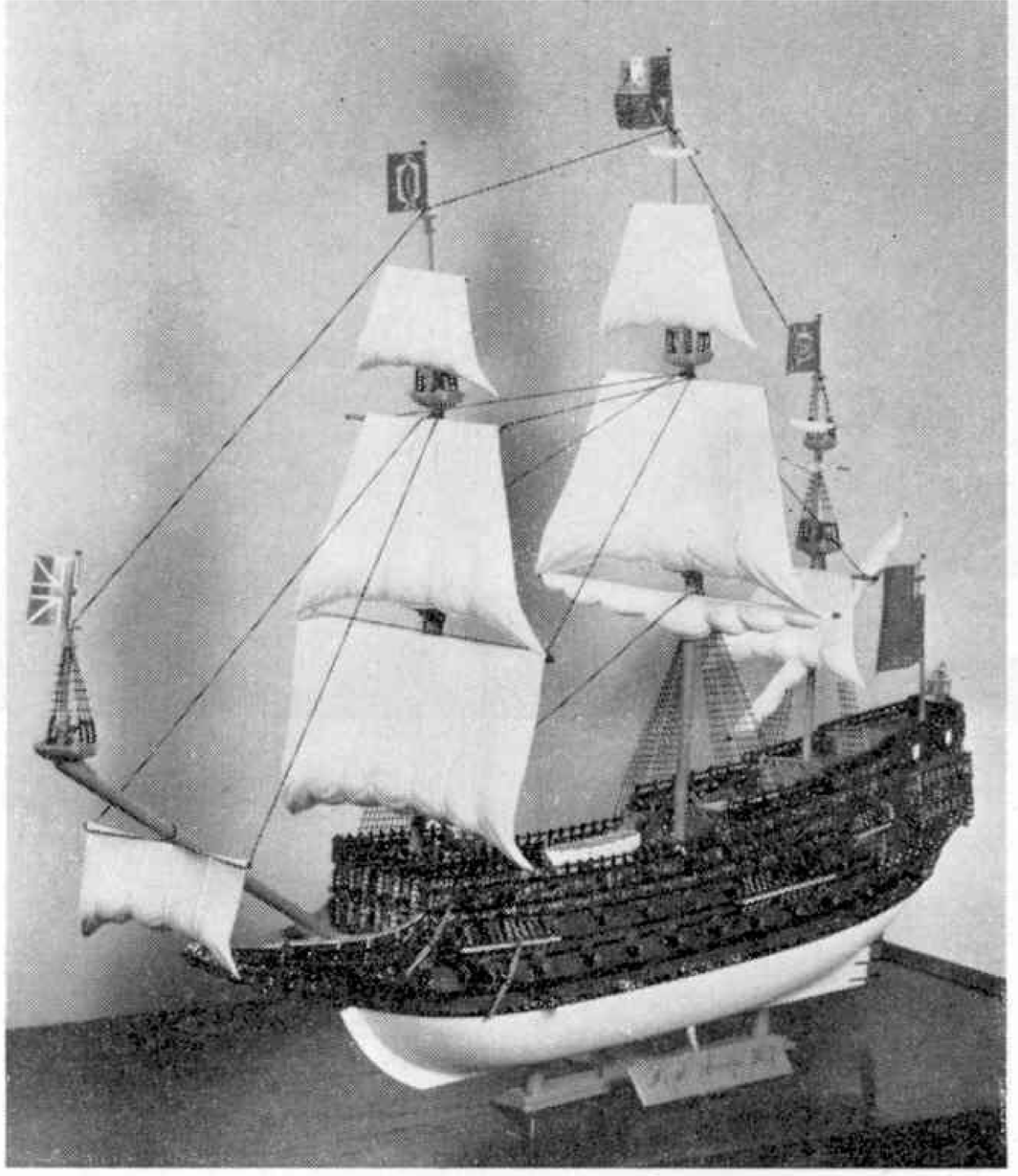
Tow-ropes can be a danger to the crew and to prevent slack ropes becoming a menace, the men, and obstructions on the deck are given some protection by steel hoops stretched across the after-deck. Tow-ropes are connected to the tug by bollard, towing winch or in the case of an ocean-going type, to a special quick-release towing hook from which the tow can be disconnected in an emergency.

Whereas the small river tugs are 'day' boats in the sense that they do not have living quarters, the ocean-going vessels engaged on lengthy towages have to possess good accommodation and navigational aids. In addition to towing apparatus, they carry modern fire-fighting equipment and air compressors for salvage operations.

During the course of a year a great variety of unwieldy craft are towed over vastly different distances. Apart from rendering aid to disabled vessels, here are a few examples taken at random:

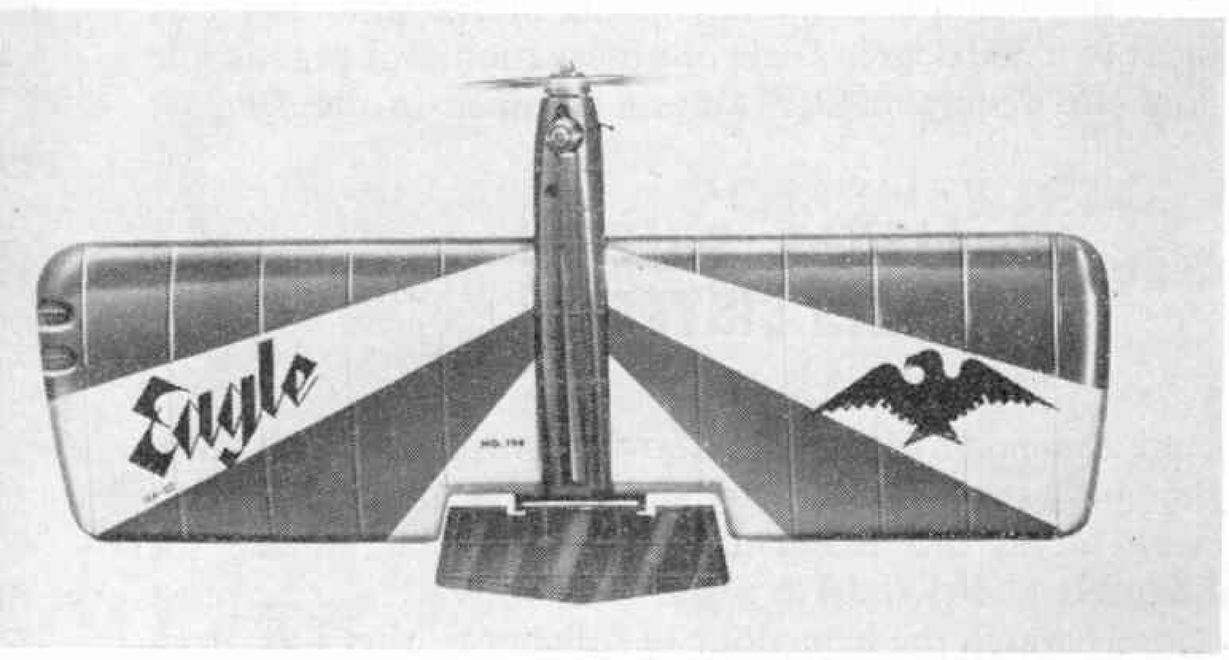
Tanker: Harwich to Bombay
Floating dry-dock: Bremerhaven to Greece
Oil drilling platform: Holland to Arabian Gulf
Half a steamship: Newcastle to Rotterdam
Aircraft carrier: New Orleans to Japan.

what's new around the shop windows

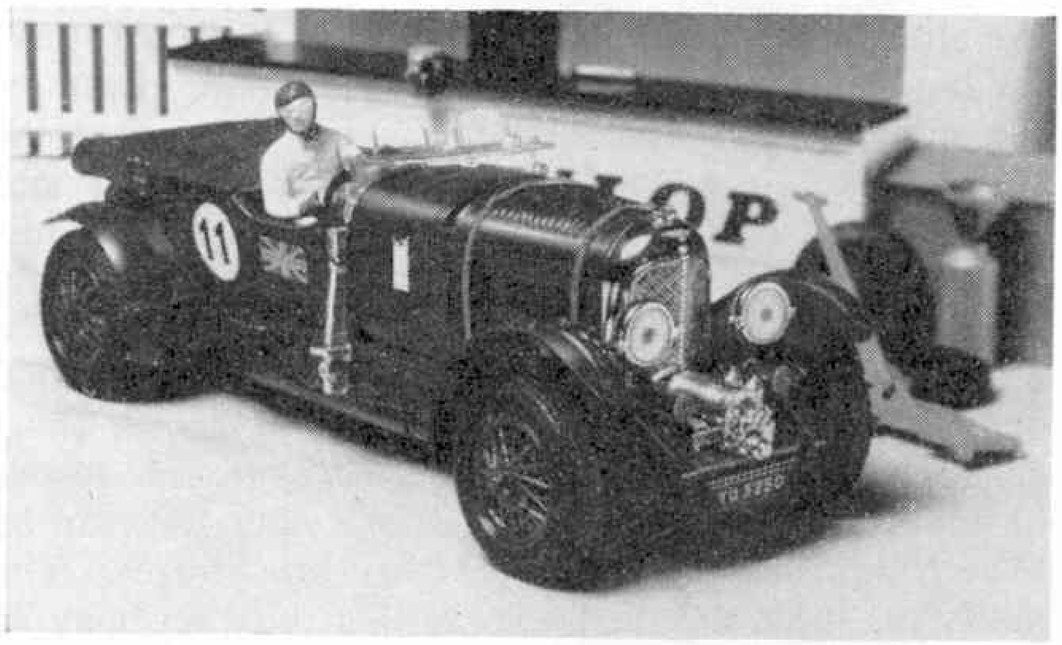


One of the most ambitious plastics construction kits to arrive on the modellers' market is the 'Royal Sovereign' by Airfix. Britain's first 100-gun warship, she caused a sensation when built at the command of King Charles I and launched in 1637.

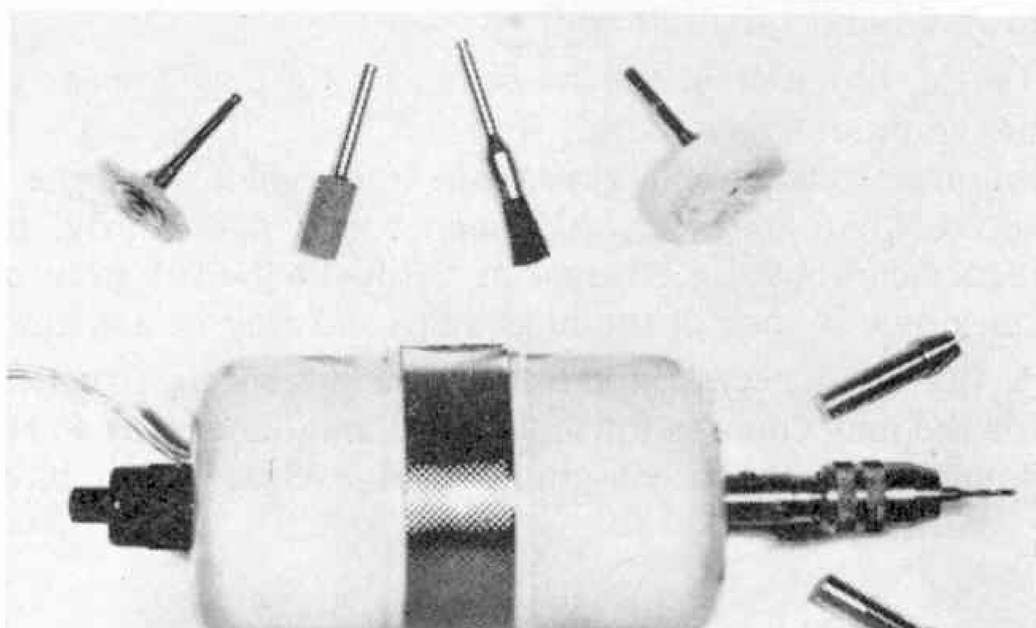
The largest number of moulded polystyrene parts ever produced by Airfix for one model—297, plus a vacuum-formed polystyrene sheet of sculptured sails, coloured flags and rigging—go to make up the model. Months of historical research by Airfix technicians at museums and libraries took place to ensure complete authenticity of detail in the accurately-scaled model, which measures 17½ in in length and 16 in in height. **Price 17s 6d.**



One of the exciting range of Wen-Mac Ready-to-Fly Control Line models available from **Messrs. E. Keil and Company Limited.** It is fitted with a Wen-Mac Hot-Shot engine with automatic starter and has an excellent stunt performance. The same company is also well known for its range of more than 150 Keilkraft model aircraft and boat construction kits to suit all modellers, young or old, beginner or expert.



This model of the 4½ litre supercharged Bentley is beautifully moulded in the finest detail, knock-off hub caps, detachable realistically spoked wheels and interchangeable spare wheel. It has a chromed radiator, headlights, supercharger, filler cap and fishtail exhaust. Hand brake, bonnet strap, flags, racing numbers, tonneau cover. The driver is dressed in character and the model is mounted on a plinth. A Spot-on model by Tri-ang. **Price 12s 11d.**



A new type of battery operated miniature electric drill is now available from New Lines Marketing Co Ltd. This drill, which can be worked from a 6 or 12 volt car battery or a dry battery of equivalent voltage, is ideal for use on delicate work and on small articles on which it is difficult to hold a heavy mains drill.

It will drill through solid brass, copper, aluminium and all precious metals and can also be used for grinding and polishing.

The set consists of a handy shaped drill unit with a polystyrene case and a brass self-centring chuck with five worktools which are quickly interchangeable. The large selection of additional tools available includes burrs, rotary files, grinding wheels, engraving cutters, aluminium cutters, felt polishers and circular saws.

Full details may be obtained from **New Lines Marketing Co Ltd, 11 Dryden Chambers, Oxford Street, London, W.1. The price is £4 7s 6d.**

SPACE NOTES

J. Humphries, B.Sc. (Eng.)
A.M.I.Mech.E., A.F.R.Ae.S.

Hill climbing...

the easy way

FOR DECADES, comic strip science-fiction heroes have transported themselves by means of miniature rockets or anti-gravity devices. Well, we may not have anti-grav. yet, but several American firms have now developed back-carried rockets. One of the first firms to start development was Bell Aerosystems and their Small Rocket Lift Device (SRLD) is capable of flying a man 370 ft distances at 3 to 4 ft height at a speed of 35 mph. The rocket belt consists of a twin-jet hydrogen peroxide rocket mounted on a fibreglass 'corset'. The pilot, if one can call him such, holds two control tubes.

Vehicles in space

WHEN I drew up the list of satellites still in orbit which was published in our last Space notes, I asked the Editor to leave a few blank lines at the bottom to accommodate any satellites that were launched before the date of publication. Far more were launched than I had expected, and the list was consequently left incomplete. The 'left-overs' are published in our first table this month. Two multiple American launchings accounted for several of the extra satellites, and two of these, Vela 1 and Vela 2, are of particular interest. This series of satellites is intended for the detection of nuclear explosions in space. There will finally be a series of six; three of these will be in orbit in one plane at 60,000-70,000 miles altitude, and the other three at a similar height but in an orbit at right angles to the first. Vela 1 and 2 were first injected into a lower orbit and then 'kicked' out to the present position by a small auxiliary rocket.

Another manoeuvrable satellite that hit the headlines was Polyet 1—which was announced by Mr. Kruschev at a press conference. Although there have been no technical releases, this vehicle is probably one of the Vostok series, weighing about 10,000 lb, and is a forerunner of manned versions which will be used for in-orbit refuelling experiments. The initial orbit of Polyet was 211/329 miles and, according to the Russians, this was varied both up and down by firing the on-board propulsion, before putting it into a final orbit of 213/894 miles.

The second table shows other space vehicles that are still in orbit—or to be more precise, presumed still in orbit. Although artificial Earth satellites can be seen with telescopes, interplanetary vehicles are completely lost when their radios fail. Thus the orbital figures given in the table are those calculated from data obtained up to the date of radio failure—none of them are now known to be transmitting. For all we know, some of them may by now have been removed from the scene by meteors or other interplanetary debris. However, from our knowledge of the distribution of such material it is unlikely that any of the vehicles have yet suffered from severe damage by this means.

Satellites launched since April 1962 and still in orbit

Name	*Date launched*	*Date due down*	*Weight (lb)*	*Orbit height Period (mins)*	*Minimum (miles)*	*Maximum (miles)*	*Transmitting radio signals*
Transit ?	28 Sept. 63	3000	?	107	677	701	?
None	28 Sept. 63	3000	?	107	669	701	No
Radiation	28 Sept. 63	3000	134	107	669	701	Yes
Vela 1	17 Oct. 63	Indefinite	484	6408	70860	61740	?
Vela 2	17 Oct. 63	Indefinite	484	6486	71450	46040	?
None	29 Oct. 63	End Dec. 63		90	171	191	?
None	29 Oct. 63	March 65		93	183	352	?
Polyet 1	1 Nov. 63	Dec. 64		102	213	894	Yes
Explorer 18	27 Nov. 63	Dec. 64	136	5666	119	122800	Yes
Centaur	27 Nov. 63	3000	10180	108	340	1055	?
None	27 Nov. 63	End Dec. 63		90	109	240	?

Figures correct as at 1 December 1963

Space vehicles still in orbit about Sun.

Name	*Date launched*	*Weight (lb)*	*Period (days)*
Lunik 1	2 Jan. 59	3245	450
Pioneer 4	3 March 59	13·4	398
Pioneer 5	11 March 60	94·8	312
Venus Probe	12 Feb. 61	1419	300
Ranger 3	26 Jan. 62	727	406
Mariner 2	26 Aug. 62	447	348
Ranger 5	18 Oct. 62	755	366
Mars 1	1 Nov. 62	1965	519
Lunik 4	2 April 63	3135	

Figures correct as at 1 December 1963

GREAT CHANCE FOR HORNBY 3-RAIL ENTHUSIASTS!

Hurry– see your stockist!

Soon production of 3-rail will be discontinued so 1964 is your last chance to build up your 3-rail layout with locomotives, rolling stock, track and accessories. Watch your dealer's window for special offers and announcements.

HORNBY

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MECCANO AND ITS ANCILLARIES

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meccano magazine

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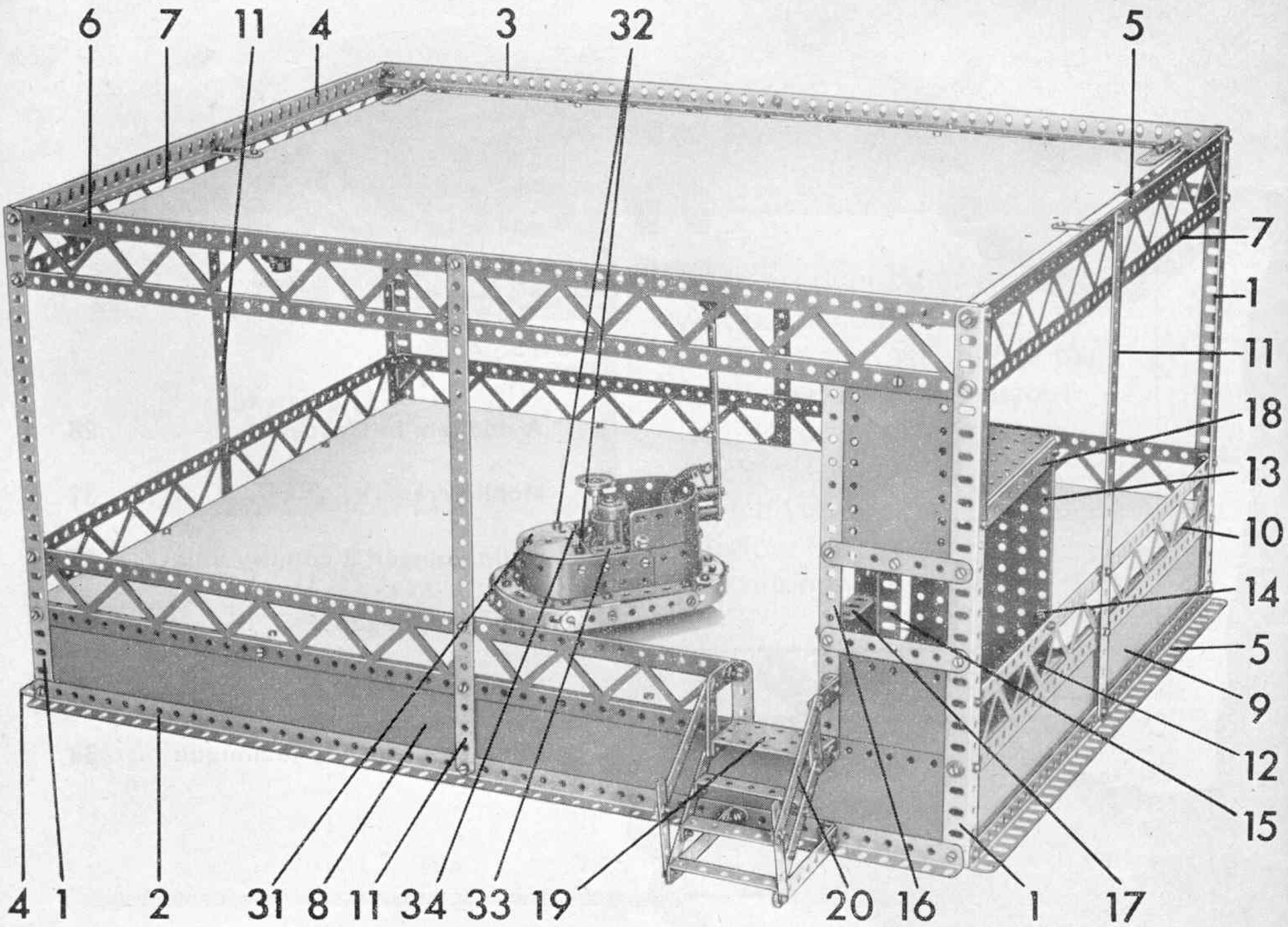
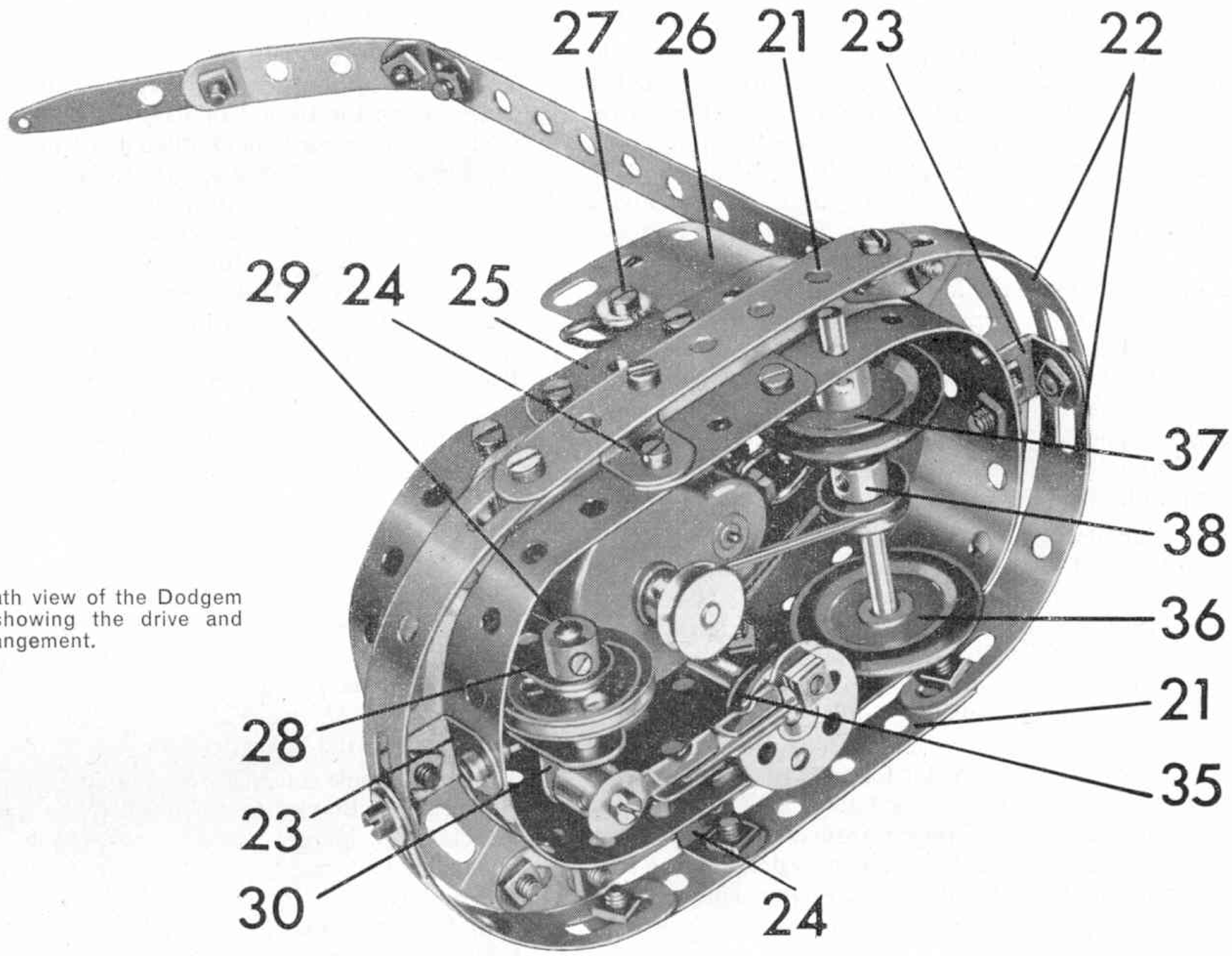
by **SPANNER**

A 'Dodgem' in Meccano

The complete Dodgem Car and Track described in this article. Elektrikit parts enable power for the Emebo Motor in the car to be picked up in a realistic manner.





An underneath view of the Dodgem Car itself, showing the drive and steering arrangement.

ALL OF us, at some time or another, have experienced the thrills and excitement of the fairground—either at a permanently sited, giant amusement park, or among the stalls of a small travelling fair. In these pages last month we featured a monster roundabout of the type found only at established amusement parks, but this month we have an attraction without which no fair would be complete, the Dodgem. The floor and roof are made of sheet metal, obtainable from most hardware dealers, yet this can be replaced by a variety of other things. Tin foil attached to a sheet of cardboard makes a good—and cheap—substitute as also does small-aperture wire netting, or the fine gauze often found in food safes and fireguards.

As in the case of the roundabout described last month, this model has been devised to incorporate some Elektrikit parts.

The track housing is built up from a basic 'box' framework of Girders composed of two rectangles joined together at the corners by $12\frac{1}{2}$ in Angle Girders 1. Each rectangle is made by joining together two $24\frac{1}{2}$ in Angle Girders 2 and 3 with $18\frac{1}{2}$ in Angle Girders 4 and 5. When the two rectangles are connected the two $12\frac{1}{2}$ in Angle Girders 1 also hold in position, at the top, two $24\frac{1}{2}$ in compound Braced Girders 6 and two compound $18\frac{1}{2}$ in Braced Girders 7. The $24\frac{1}{2}$ in lengths are made up from two $12\frac{1}{2}$ in Braced Girders, whilst the $18\frac{1}{2}$ in lengths incorporate two $9\frac{1}{2}$ in Braced Girders. At their other ends, Girders 1 have two $24\frac{1}{2}$ in by $2\frac{1}{2}$ in and two $18\frac{1}{2}$ in by $2\frac{1}{2}$ in compound Strip Plates 8 and 9 bolted to them. Plates 8 comprise two $12\frac{1}{2}$ in by $2\frac{1}{2}$ in Strip Plates, whereas Plates 9 are built up from two $9\frac{1}{2}$ in by $2\frac{1}{2}$ in Strip Plates. The upper bolts holding Plates 8 and 9 in place also hold a third $24\frac{1}{2}$ in by $18\frac{1}{2}$ in rectangle 10, constructed in a similar manner to the other two, in position. The horizontal flanges of the Angle Girders, used in this rectangle, are uppermost.

The whole framework is braced by four $12\frac{1}{2}$ in Strips 11, and Braced Girders are bolted, as shown, to form handrails.

A $3\frac{1}{2}$ in Flat Girder is attached to rectangle 10 by Bolt 12, this Bolt also helping to hold a $5\frac{1}{2}$ in by $3\frac{1}{2}$ in Flat Plate in position. The Flat Plate is bolted through its three remaining corners to the rectangle 10 and the Flat Girder. In addition, this last bolt fixes an Angle Bracket to the upper face of the Flat Plate.

The pay-box is now constructed, using the Flat Plate as the floor. Another $5\frac{1}{2}$ in by $3\frac{1}{2}$ in Flat Plate 13 is bolted to the Angle Bracket fixed to the Flat Plate forming the floor and to a further Angle Bracket 14 fixed to the hand-rail. The doorpost is a $5\frac{1}{2}$ in Angle Girder 15 connected to an Angle Bracket bolted through the fifth hole from the end, along the edge of the floor Plate. A $5\frac{1}{2}$ in by $1\frac{1}{2}$ in Flexible Plate overlayed by a $5\frac{1}{2}$ in Strip is fixed to

the Girder 15. Another 9½ in Angle Girder is bolted to the 9½ in Strip 16 connecting Braced Girder 6 and the middle rectangle of Girders. A 3½ in Strip is bolted to this Angle Girder and to Angle Girder 15 through the fifth holes from their lower ends. The resulting space beneath this Strip is filled in with a 3½ in by 2½ in Flexible Plate. A 3½ in Strip forms the remaining window frame and a small counter is added by bolting a 1½ in Angle Girder 17 to the horizontal 3½ in Strip. A final 5½ in Angle Girder 18 connects an Angle Bracket, bolted to Plate 13, to the Angle Girder 1 and a last 5½ in by 3½ in Flat Plate is fixed to this, and a corresponding Angle Girder at the other top corner of Plate 13, thus completing a roof. The remaining space between Angle Girder 1 and Strip 16 is covered by a 3½ in by 2½ in and a 4½ in by 2½ in Flexible Plate, except for a window that is edged by two 3½ in Strips, as shown.

The track itself is made of sheet metal or a suitable substitute, cut to size and bolted direct to the flanges of the Girders comprising the rectangle 10. The roof is also sheet metal, but it is cut so that it will fit inside the top rectangle of Girders without touching any of them. It is held in place by Insulating Strips and Insulating Fishplates from an Elektrikit outfit, so that, electrically speaking, it is completely isolated from the metal of the rest of the model. Elektrikit Lamp Holders also help to hold the rod in position and if Lamps are fitted in these, they will light up. If power from a battery is used, however, you may find that the Lamps drain this to such an extent that the car will not operate satisfactorily.

A set of steps is built, using a 2½ in by 1½ in Flanged Plate 19, four 3½ in Strips, three 2 in Strips, and two 2½ in Narrow Strips. Each handrail consists of a 3½ in Narrow Strip 20, and a 1½ in Strip joined to the model by an Angle Bracket. The Flanged Plate 19 is joined to the model, proper, by Angle Brackets, and the actual steps are 2½ in by ½ in Double Angle Strips.

Turning, now, to the car itself, the chassis, which also serves as a bumper, consists of two 3½ in Strips 21, joined at each end by two Formed Slotted Strips 22. Four Double Brackets 23 and 24 are bolted to the resulting oval, as shown. To the top of both Brackets 23, a 3 in Stepped Curved Strip is fixed, and to the top of both Brackets 24, a 3½ in Strip is bolted through the third hole. The Strips and Curved Strips are joined by Fishplates.

Another oval is formed by bolting two 5½ in by 1½ in Flexible Plates and two 1½ in by 1½ in Flat Plates 25 to the free, inside lugs of the Double Brackets. The back, a further 5½ in by 1½ in Flexible Plate 26, is then fixed in place and is strengthened by a 2½ in by ½ in Double Angle Strip held by Bolt 27 to each side. A 1 in by ½ in Angle Bracket is bolted to the front Flexible Plate, the bolt passing through the centre hole of the Plate, and the smaller lug of the Angle Bracket. A 1 in by ½ in Double Bracket 28 is lock-nutted through the outer hole in the larger lug of this Angle Bracket and a 1 in Rod 29, carrying a 1 in loose Pulley, is journalled in the end holes of its lugs. The Pulley, positioned between the lugs, is held in place by two Collars. An Angle Bracket 30, with a Threaded Boss attached to one lug, is bolted to the right-hand lug of Double Bracket 28. A Rod and Strip Connector is pivotally fitted to the other end of the Threaded Boss and this is joined to a further Rod and Strip Connector by a 1 in Rod. This Rod and Strip Connector is, in turn, lock-nutted to a 1 in diameter Bush Wheel (Elektrikit Part No. 518) fitted on the end of a 2½ in Rod forming the steering column. Three Angle Brackets are bolted to the front 5½ in by 1½ in Double Angle Strip and these form the supports for a Semi-Circular Plate 31. The rear two Bolts 32 holding this Plate in position also hold 1½ in Strips 33 and 34 between the lugs of the Angle Brackets and the Semi-Circular Plate. The Strips point rearwards with the Bolts passing through their first holes. The steering column is journalled in the last hole of Strip 34 and in an Angle Bracket 35, attached to the side of the car. It is held by a Collar at the top whilst the steering wheel is a 1 in Pulley with boss.

A 3 in Rod carrying two 1 in Pulleys with Rubber Rings 36 and 37, and a ½ in fixed Pulley 38, forms the rear axle. Pulley 36 is fixed on the Rod, but 37 is loose, being held against the side by a Collar. An Emebo Motor is bolted, as shown, to the Double Angle Strip held by Bolts 27 and a 2½ in Driving Band connects a ½ in Pulley on the Motor to Pulley 38 on the rear axle.

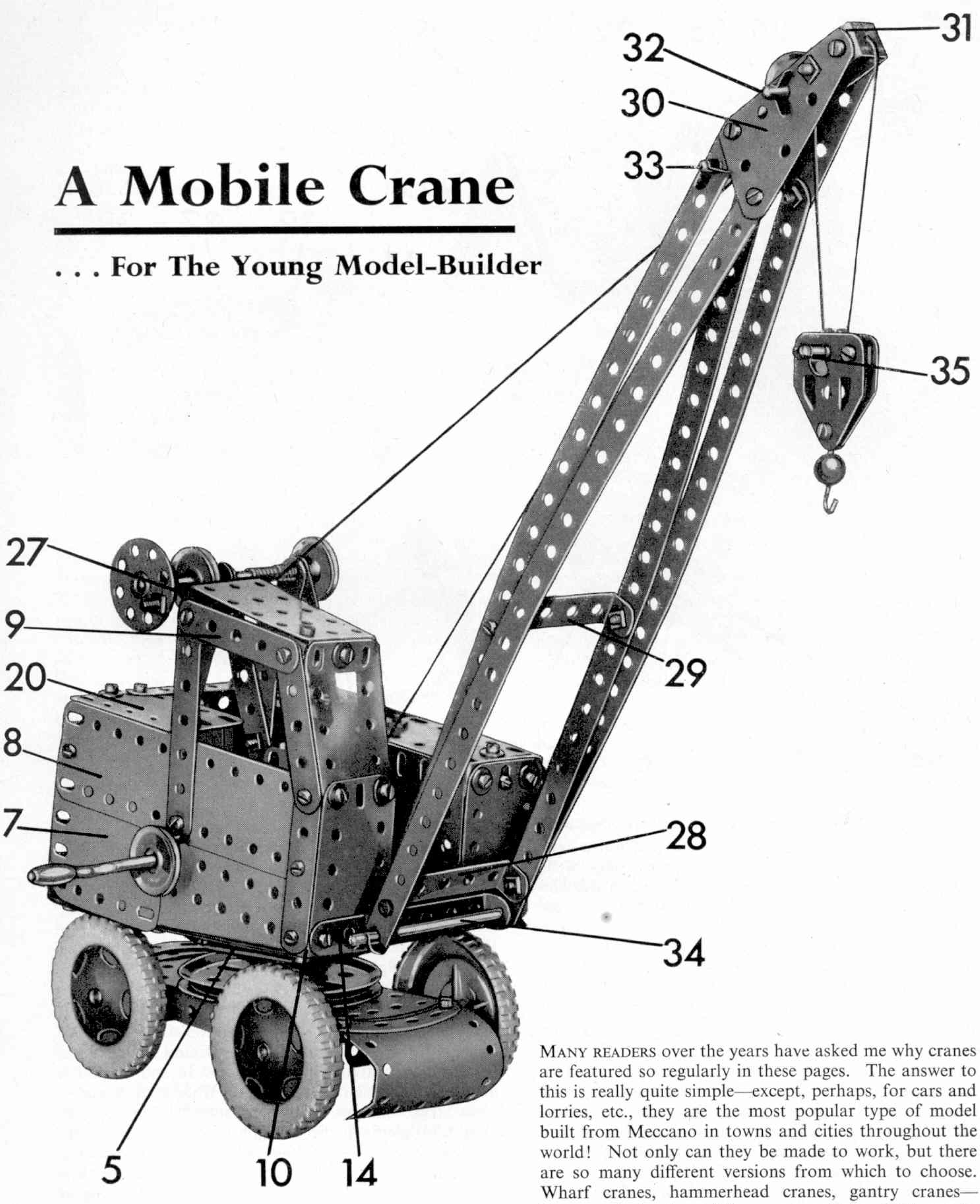
The pick-up pole consists of a 5½ in Strip extended by an Obtuse Angle Bracket to which is bolted a 2 in laminated flexible strip, in turn extended by a 1½ in Wiper Arm (Elektrikit Part No. 532). The laminated strip is built up from two 2 in Flexible Strips (Elektrikit Part No. 530). Two Insulating Spacers (Elektrikit Part No. 564) are bolted through the bottom two holes of the 5½ in Strip, and these are attached to the 5½ in by 1½ in Flexible Plate 26 by another two bolts.

One Motor lead is taken to one of the bolts fixing the 5½ in Strip to the Insulating Spacer, care being taken that no electrical contact is made with the car proper. The other lead is 'earthed', i.e., an electrical contact is made with the car. In our model this lead is taken to Bolt 27. Before making any connections, however, it is best to coil the loose wire, as shown in the main illustration, to save space.

Parts required.—4 of No. 1; 1 of No. 1a; 1 of No. 2; 12 of No. 3; 3 of No. 6; 4 of No. 6a; 6 of No. 7; 6 of No. 7a; 4 of No. 8; 4 of No. 9; 1 of No. 9f; 4 of No. 10; 4 of No. 11; 1 of No. 11a; 16 of No. 12; 1 of No. 12b; 1 of No. 12c; 1 of No. 16a; 1 of No. 16b; 2 of No. 18b; 3 of No. 22; 1 of No. 22a; 1 of No. 23a; 194 of No. 37a; 182 of No. 37b; 25 of No. 38; 4 of No. 48a; 1 of No. 51; 3 of No. 52a; 4 of No. 59; 1 of No. 64; 2 of No. 74; 2 of No. 89a; 7 of No. 99; 8 of No. 99a; 1 of No. 99b; 1 of No. 103c; 17 of No. 111c; 2 of No. 135; 1 of No. 186; 4 of No. 189; 2 of No. 190a; 1 of No. 191; 1 of No. 193b; 4 of No. 196; 4 of No. 197; 2 of No. 212; 1 of No. 214; 4 of No. 215; 2 of No. 235; 2 of No. 235b; 2 of No. 502; 2 of No. 503; 2 of No. 513; 1 of No. 518; 2 of No. 530; 1 of No. 532; 4 of No. 539; 2 of No. 564: 1 Emebo Motor.

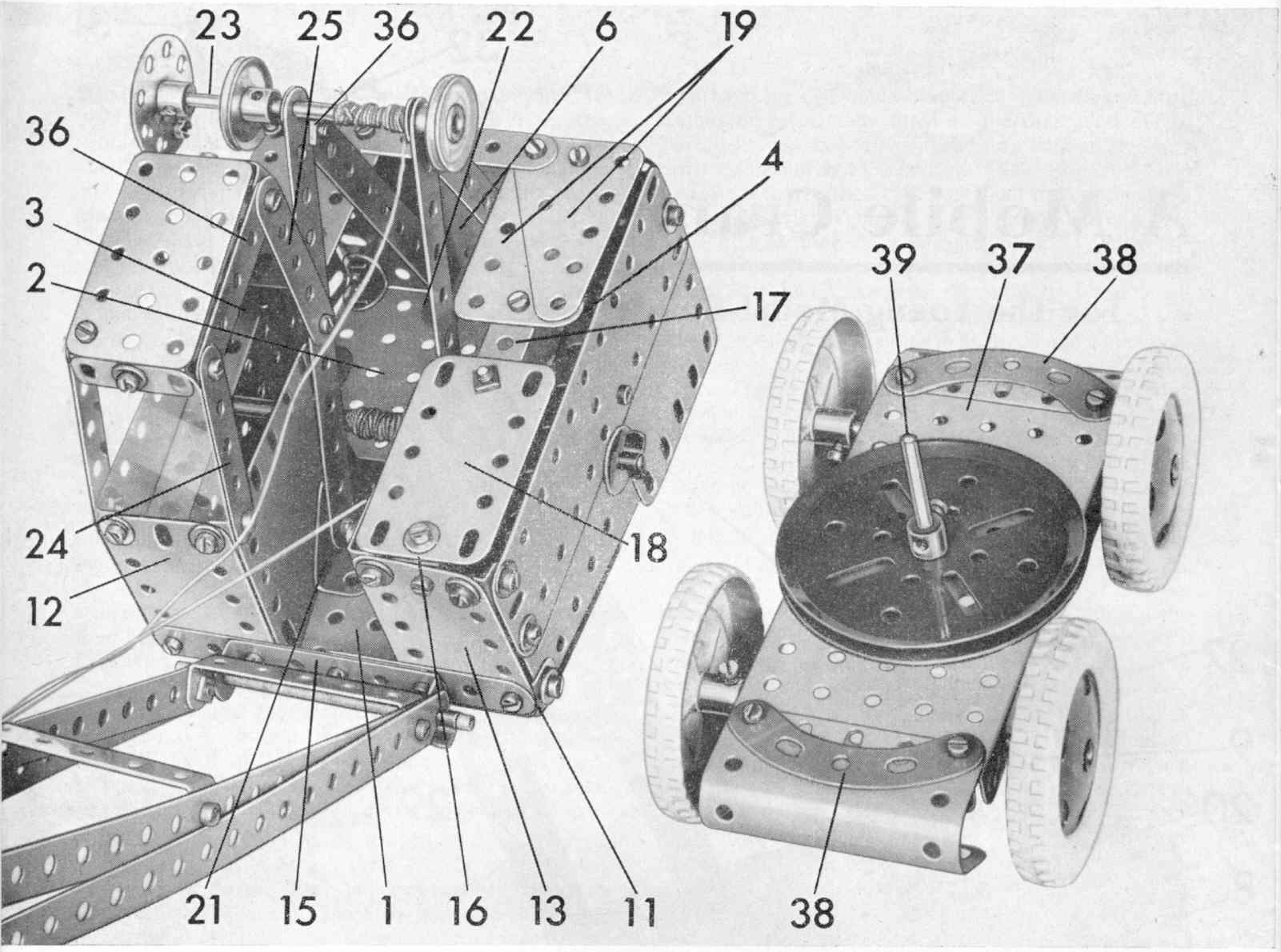
A Mobile Crane

. . . For The Young Model-Builder



MANY READERS over the years have asked me why cranes are featured so regularly in these pages. The answer to this is really quite simple—except, perhaps, for cars and lorries, etc., they are the most popular type of model built from Meccano in towns and cities throughout the world! Not only can they be made to work, but there are so many different versions from which to choose. Wharf cranes, hammerhead cranes, gantry cranes—these are just a few of the many varieties which can be seen in any port from London to Leningrad, and all of them, at one time or another, have been accurately reproduced in Meccano.

Of the numerous types of load-moving machines in existence today, one of the biggest model-building



successes is the Mobile crane. The model described here is based on such a structure, although it is not a very complicated example, but it does operate very well. The jib can be raised and lowered at will, as can the hook, and the whole superstructure swivels on a free-running, wheeled base. As can be seen, the jib makes use of four $12\frac{1}{2}$ in Strips. These can be replaced by built-up strips, using smaller Perforated Strips, if you do not possess any, or all, of the largest size. The base itself can be enlarged to give greater stability to the model but, in this event, remember to move the pivot-point accordingly.

Basic construction is as follows: two $4\frac{1}{2}$ in by $2\frac{1}{2}$ in Flat Plates 1 and 2 are bolted to the lower flanges of two Flanged Sector Plates 3 and 4, the same bolts also holding two $5\frac{1}{2}$ in Strips against the underside of the Plates, one at each side. Note, however, that the Plates 1 and 2 are fixed to the Sector Plates with one hole of the flanges separating them, which results in a gap of about half-an-inch between the two. A 3 in Pulley 5 is fixed below the Flat Plates by a $\frac{1}{2}$ in and $\frac{3}{8}$ in Bolts, with its boss protruding upwards through this gap. The Pulley is spaced from the Plate at the front by a 1 in loose Pulley on the forward $\frac{1}{2}$ in Bolt.

A $4\frac{1}{2}$ in by $2\frac{1}{2}$ in Flexible Plate is connected to the back of Plate 2 by two Angle Brackets and a further $4\frac{1}{2}$ in by $2\frac{1}{2}$ in Flexible Plate 6, overlapping four holes, is fixed to this by bolts through the corner holes of the first Flexible Plate. These bolts also hold Double Brackets in position. Each side of the body is similarly built, using a $2\frac{1}{2}$ in by $2\frac{1}{2}$ in Flexible Plate, 7, and a $5\frac{1}{2}$ in by $1\frac{1}{2}$ in Flexible Plate 8, the only difference being that the bolts used in the right-hand side also hold a $3\frac{1}{2}$ in and two $2\frac{1}{2}$ in Strips which form part of the cab. The Strips are arranged as shown and are joined by another $2\frac{1}{2}$ in Strip 9.

Angle Brackets 10 and 11 are fitted, and to these are bolted $2\frac{1}{2}$ in by $1\frac{1}{2}$ in Flexible Plates 12 and 13 and a $4\frac{1}{2}$ in compound strip 14, built up from a $3\frac{1}{2}$ in and a $2\frac{1}{2}$ in Strip. To this, in turn, is bolted a $2\frac{1}{2}$ in by $\frac{1}{2}$ in Double Angle Strip 15. A $2\frac{1}{2}$ in by $\frac{1}{2}$ in Double Angle Strip 16 is attached to Plate 13 and a corresponding Angle Bracket is fixed to Plate 6. The two are then joined by a $5\frac{1}{2}$ in Strip 17 at the same time bolting in place a $2\frac{1}{2}$ in by $1\frac{1}{2}$ in Red Plastic Plate 18 and two $2\frac{1}{2}$ in by $1\frac{1}{2}$ in Triangular Flexible Plates 19. A Red Plastic Plate 20 is bolted to another $2\frac{1}{2}$ in by $\frac{1}{2}$ in Double Angle Strip attached to Plate 6.

Two Trunnions 21 and two Reversed Angle Brackets 22, only one each of which can be seen in the illustrations,

are bolted to the floor of the cab and to these are fixed four 5½ in Strips, connected at the top, as shown, by a 3½ in Rod 23. The Rod is held in position by two 1 in fixed Pulleys, and an 8-hole Bush Wheel, carrying a ⅜ in Bolt as a handle, is also attached. 2½ in by 2½ in Flexible Plates are also fixed to Trunnions 23, by the bolts holding the 5½ in Strips, and they are secured to Plates 12 and 13 by Angle Brackets. The bolt holding the right-hand Plate holds, in addition, a 2½ in Strip 24, and a similar 2½ in Strip 25 is bolted to one of the 5½ in Strips. The two are then connected by yet another 2½ in Strip 26.

Having now been constructed, the sides of the cab are joined, at the rear, by a 1½ in by ½ in Double Angle Strip 27, to which a 2½ in by 1½ in Flanged Plate is bolted. This Flanged Plate is joined to Strips 9 and 26, at the front ends, by Angle Brackets. The windscreen is a 2½ in by 1½ in Transparent Plastic Plate fixed in position as shown in the illustrations.

The jib is built-up from four 12½ in Strips spaced apart, in pairs, by two 2½ in by 1½ in Double Angle Strips 28 and 29. A 2½ in by 1½ in Triangular Flexible Plate 30 is fixed to the end of each by a 1 in by ½ in Double Bracket 31. A 1½ in Rod 32, carrying a 1 in Loose Pulley, is journalled in Plates 30 being held in place by Spring Clips. Another 1½ in Rod 33 is journalled in two of the 12½ in Strips and is held by a Spring Clip on one side and a Cord Anchoring Spring on the other. The jib is pivotally attached to the body by a 3½ in Rod 34 that passes through the end holes of the 12½ in Strips and the lugs of the Double Angle Strip 15. The Rod is held by Spring Clips.

The hook consists of two Flat Trunnions held together, but spaced at their bases by two ⅜ in Bolts each carrying three nuts on its shank. A Small Loaded Hook is held at the apex of the Flat Trunnions by a nut and bolt, and a ½ in Loose Pulley is fitted on to a 1 in Rod 35 that is held by Spring Clips. The Flat Trunnions must be held far enough apart by the nuts on the ⅜ in Bolts to allow this Pulley to turn freely. Cord for the hook is anchored to Double Bracket 3, passed around the ½ in Pulley on Rod 32 and is finally wound on a 3½ in Crank Handle, extended by a 2 in Rod in a Rod Connector, journalled in the Flanged Sector Plates 3 and 4. A 1 in Fixed Pulley 34 and a Spring Clip held the Crank Handle in position.

Jib movement is controlled by a length of Cord tied to Rod 33 in the jib and wound around Rod 23 behind the cab. A brake for both this Rod and the 5½ in Crank Handle is formed by fitting a bolt in the bosses of the right-hand 1 in Pulleys on the Rod and Crank Handle. The bolt in the former engages with the head of a ⅜ in Bolt 36 fixed in one of the 5½ in Strips, and the bolt in the latter engages with the head of the bolt shown in the top illustration. Both the Rod and the Crank Handle should be free to move about a quarter of an inch in their bearings so that the boltheads can be engaged or disengaged by sliding the Rod or Handle one way or the other.

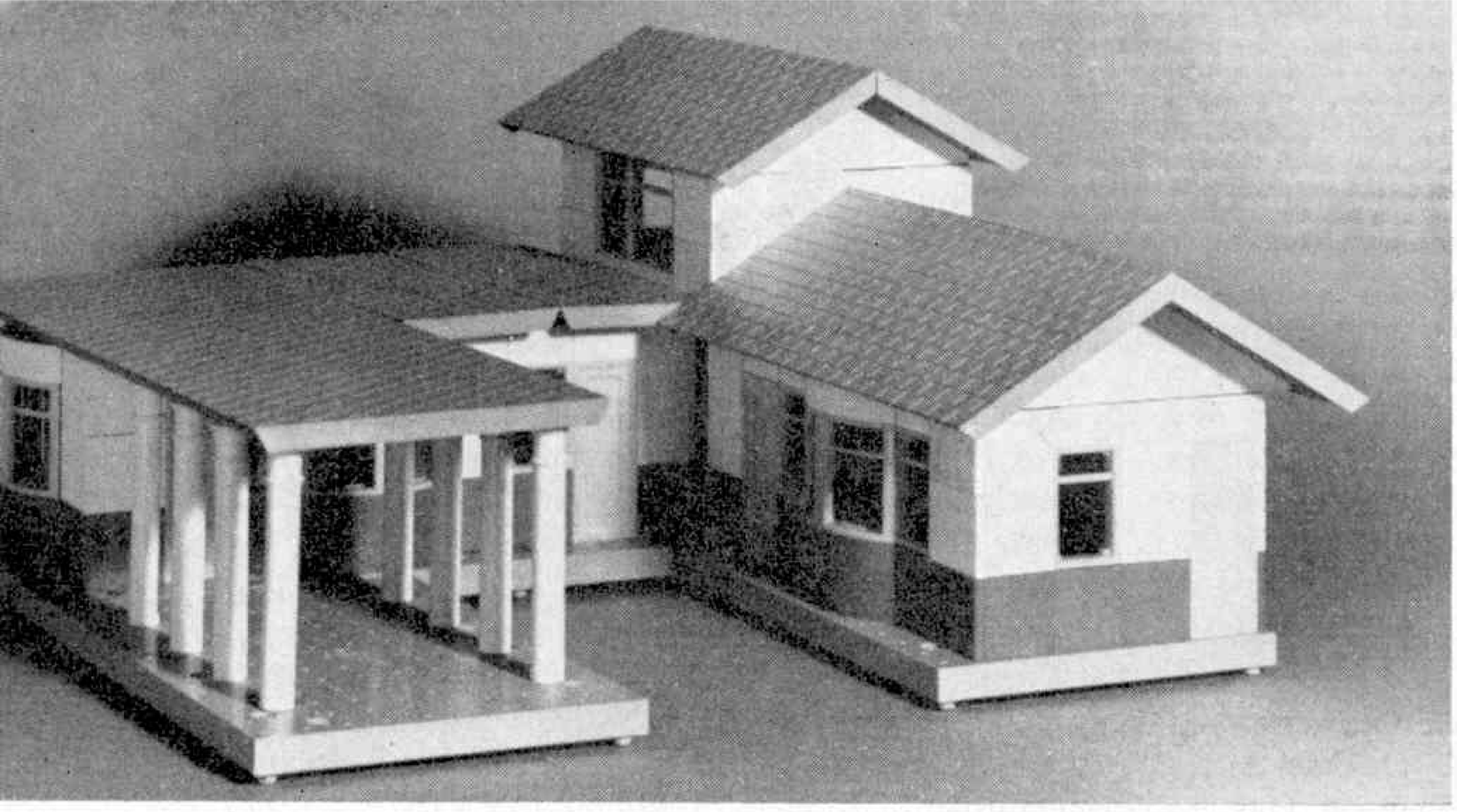
This completes construction of the major part of the crane, leaving only the wheeled base to be built. A U-section Curved Plate and an ordinary 2½ in by 2½ in Curved Plate are bolted, one each end, to a 5½ in by 2½ in Flanged Plate 37, the same bolts also holding a 2½ in Stepped Curved Strip 38. Passed through the centre hole of the Flanged Plate is a 2 in Rod 39 that is held in position by a 3 in Pulley above the Plate and a 2 in Pulley beneath it. The Pulleys must hold Rod 39 as rigidly as possible while still allowing the Flanged Plate to swivel.

Four-inch Rods, journalled in the flanges of Plate 37, serve as axles, and they are kept in place by 2½ in Road Wheels. Finally, Rod 39 is inserted as far as possible into the boss of Pulley 5, bolted to the underside of the chassis, and the Set Screw in the boss is tightened against it.

If when operating your model, you find it has a tendency to overbalance, the problem can be solved by fitting something heavy at the rear to act as a counterweight. The ideal place for such a weight would be inside one of the Curved Plates attached to the Flanged Plate 37 but, it is rather difficult to find an anchorage here. A suitable solution, therefore, is to bolt as many Strips as possible to the bottom edges of the 4½ in by 2½ in Flexible Plate which, together with Plate 6, forms the rear-side of the body.

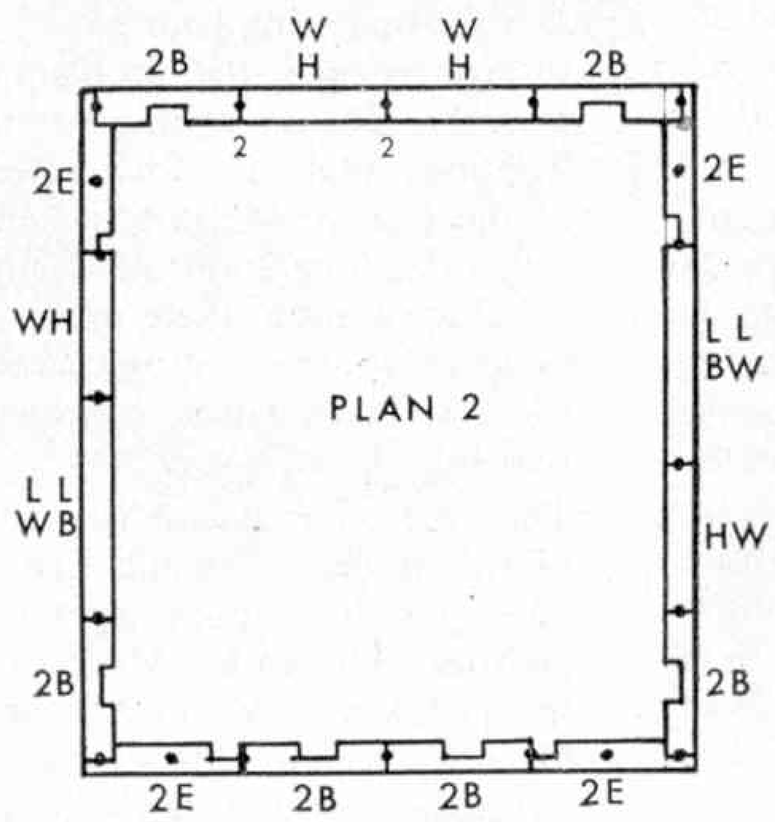
This, then, deals with the actual constructional details of the model. I would like to suggest, however, that after you have built it, you let your own designing abilities go to work. Modify it, Make improvements to the basic structure. Give your imagination a free hand! We often receive letters from readers pointing out that a particular section of a model I have featured could have been built in a stronger and more realistic way. This is quite true, and the interest shown by readers is most gratifying, but I do not presume to introduce any models as being the finest example of a particular construction. Some models are better than others yet, no doubt, *all* could be improved upon. Indeed, I wholeheartedly encourage modification as I know how much more fun is obtained from altering a model to suit your own ideas, once you have built it, than there is from following the step-by-step instructions and then leaving it at that. You will also find that, having had some experience of modifying existing models, your ability to build models entirely to your own designs is greatly increased.

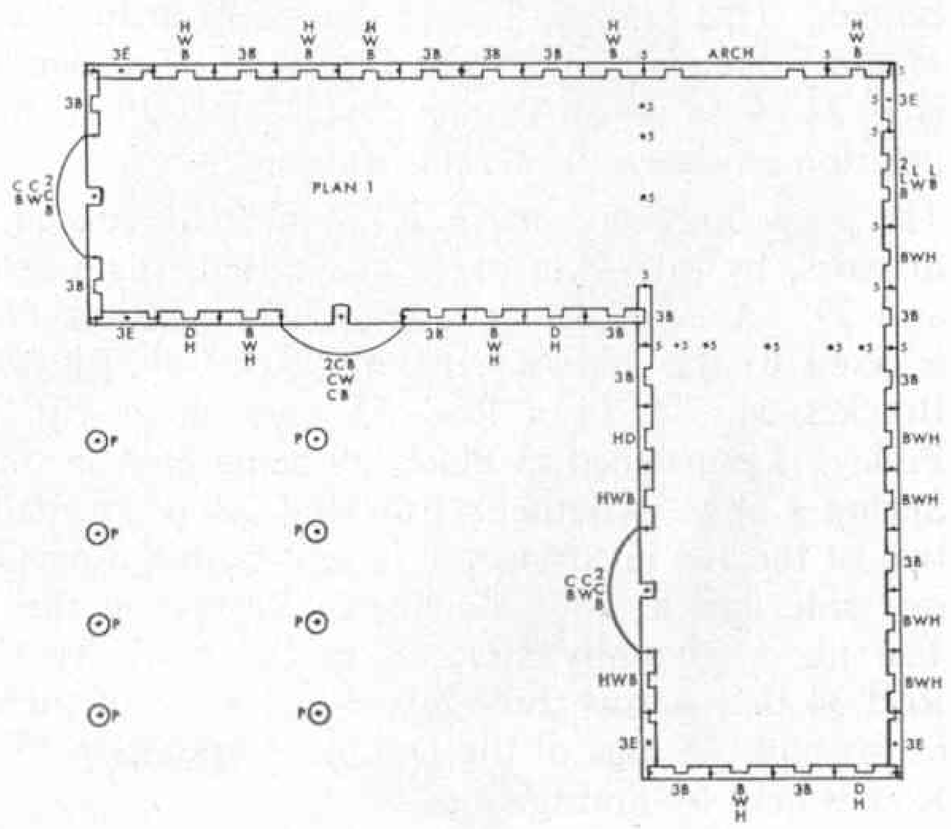
Parts required.—4 of No. 1; 7 of No. 2; 2 of No. 3; 8 of No. 5; 2 of No. 11; 1 of No. 11a; 10 of No. 12; 2 of No. 15b; 2 of No. 16; 2 of No. 17; 2 of No. 18a; 1 of No. 18b; 1 of No. 19a; 2 of No. 19b; 1 of No. 20a; 3 of No. 22; 2 of No. 22a; 1 of No. 23; 1 of No. 24; 8 of No. 35; 87 of No. 37a; 76 of No. 37b; 14 of No. 38; 1 of No. 38d; 1 of No. 40; 1 of No. 48; 5 of No. 48a; 1 of No. 51; 1 of No. 52; 2 of No. 53a; 2 of No. 54; 1 of No. 57c; 2 of No. 90a; 1 of No. 111a; 5 of No. 111c; 2 of No. 125; 2 of No. 126; 2 of No. 126a; 1 of No. 176; 4 of No. 187; 2 of No. 188; 2 of No. 189; 2 of No. 190; 2 of No. 191; 1 of No. 193; 1 of No. 194; 1 of No. 199; 1 of No. 200; 1 of No. 213; 1 of No. 221.



BAYKO builds

Our photograph shows the finished building with its attractive colonnade or covered walk.





Build yourself this country villa

OUTFIT No. 14 contains all the parts necessary for the construction of the Bayko luxury villa shown here, which is fairly easy to build, in spite of its rather complex appearance. The building consists principally of a single storey, but there is a room above the entrance hall and plan No. 2 shows how this is constructed. You will find it quicker to fit all the Rods in position first, then, once this is done, it is a simple job to drop the various Bricks and Windows into place between them.

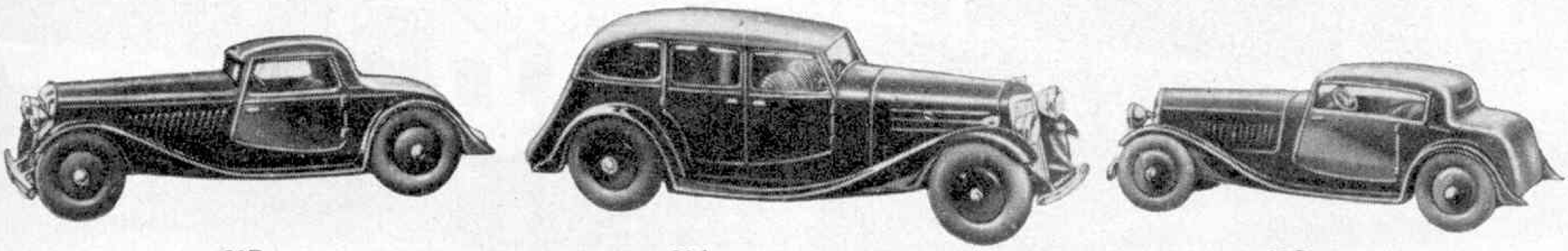
No. 3 Brick Rods are used throughout the greater part of the model, excepting the two-storey portion which incorporates No. 5 Brick Rods, and two No. 2 Brick Rods (as shown in the plans). When building this latter part it is important to note that a 13 by 9 hole Floor is fitted above the third layer of Bricks.

The Roof and Base arrangements are evident from both the photographs, but I should mention that only one Base Link can be used to secure the Base carrying the eight Pillars. The rigidity of the model, however, is not affected in any way by this, provided that the one Base Link is screwed in place as tightly as possible.

This is the sort of model that allows you to exercise a certain amount of modification, and is designed to give you this opportunity. For instance, you might wish to have the frontal Arch in the back wall, so that the covered walk between the Pillars leads up to it. The two doors which are at present part of the Back Wall could be substituted for the Arch at the front of the building. You yourselves, can, no doubt, think of many other alterations to make.

Parts required.—1 Arch; 4 Bases; 5 Base Links with Screws; 34 Red Bricks; 36 White Bricks; 6 Red Curved Bricks; 3 White Curved Bricks; 7 Red End Bricks; 16 White End Bricks; 2 Red Half Bricks; 21 White Half Bricks; 3 Red Long Bricks; 2 White Long Bricks; 2 No. 2 Brick Rods; 50 No. 3 Brick Rods; 18 No. 5 Brick Rods; 4 Doors; 1 13 by 9 Hole Floor; 18 Glazing Materials (Window); 3 Glazing Materials (Curved Window); 3 Glazing Materials (Large Window); 8 Pillars; 2 Roofs, type A; 2 Roofs type B; 2 Roofs, type C; 1 Roof, type D; 2 Roof Ends, type B; 2 Roof Ends, type C; 8 Corner Ties; 17 Straight Tie Bars; 18 Windows; 3 Curved Windows; 3 Large Windows.

How they all began



36B 36A 36C

IN MY notes this month I am taking the opportunity of covering a subject which, judging by the letters I receive, is of particular interest to readers—the history of Dinky Toys.

Dinky Toys first appeared on the scene without an official name. In the 1920s they came into existence as accessories for Hornby Trains and, until 1931, the range was limited to objects normally found on a railway platform, such as luggage, seats, platform machines and trucks. A series known as 'Modelled Miniatures' and based on station staff, passengers, train and hotel staff, was introduced during the 1932-33 season but these again, were meant for use with Hornby Trains. In addition, there was a set of farmyard animals, a famous distemper advertisement of the time and even a Goods Train Set. (I must point out that production of all these figures ended with the last war and no stocks whatever have been available since.)

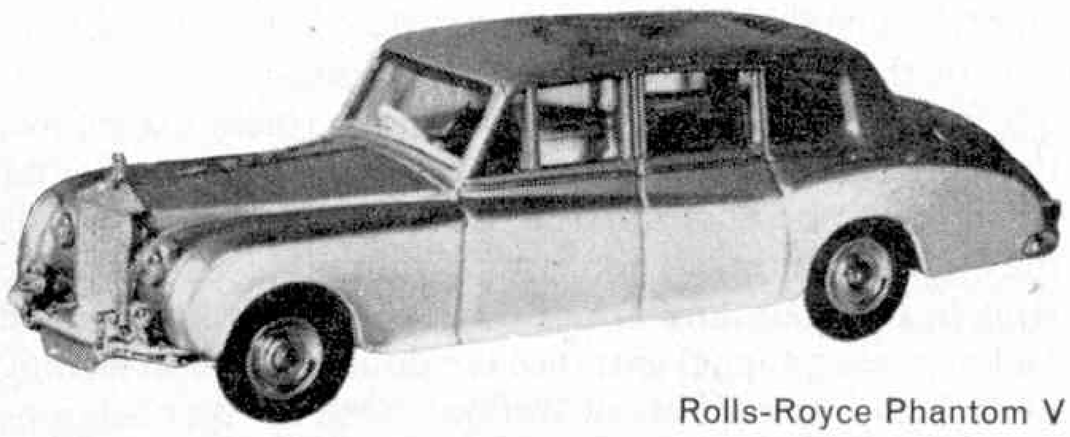
The popularity of 'Modelled Miniatures' soon became evident and motor vehicles were added to the range for the first time in the following year. Only six were available to start with—a tank, a tractor, an open sports car, a sports tourer, a lorry and a delivery van, but demand was so great that the range was greatly increased and the trade name 'Dinky Toys' was registered, and bestowed upon them. When I was searching through old records I came across the catalogues for the 1933-34 and 1934-35 seasons. The former shows only the six vehicles I mentioned before, whereas that for the following year shows more than 60 models, and the number continued to rise rapidly from that date. Indeed, at one time there were more than 200 separate models, many of which were grouped into sets. Numbers were allocated to each set and the individual models in the sets given a distinguishing letter from the alphabet. In 1938, for example, we made a Motor Car Set consisting of six cars, three of which are pictured here. The set as a whole was numbered 36 while the various models in it carried numbers 36A, 36B, etc.

Manufacture of Dinky Toys ceased during the 1939-45 war and the factory was turned over to producing materials required by our Forces.

After the war, it took some time to get back into the swing of things, but in June 1946, a Lagonda Sports Coupe was introduced, followed before the end of the year by a further six replicas. From then onwards the pace quickened and the range multiplied greatly. However, the old system of listing—part numerical, part alphabetical—was still in use and it remained in existence until 1954, when the present system came into being.

Although Dinky Toys have been manufactured for more than 30 years, their development has never advanced so quickly as in the last few years, and, of course, as time has gone by so the design and appearance of the models has been improved. Refinements over the past few years have included windows (movable ones in the case of the Rolls-Royce Phantom V)—suspension, interior fittings, Prestomatic steering, opening bonnets, boots and doors. There is no comparison between the immaculately-scaled Dinky of today and the replica made before the war. Take the Rolls-Royce Phantom V, which is illustrated on this page, and compare it with the 'relics' pictured above. One glance is enough to show you the advances.

A rather unique compliment to Dinky Toys is regularly paid by several of the best-known car manufacturers. They frequently present Dinky Toy versions of their vehicles to visiting V.I.P's or use them as table markers and gifts at dinners and other functions. This is surely the ultimate testimony to their perfection.



Rolls-Royce Phantom V

by **LAYOUTMAN**

from small beginnings . . .

how a Hornby-Dublo layout grew

THE OWNER and engineer of Hornby-Dublo layout shown in the pictures is *M.M.* reader R. Mabey, of Solihull, who writes that he was about three years old when his father brought home the set in question. Thus he had the advantage of starting young in the Hornby-Dublo hobby—no bad thing—with all the benefit of his father's interest and encouragement.

With this advantage the railway was bound to grow, and in its earlier stages of expansion was installed on a table in a large bedroom. Soon it outgrew the table, so it was moved to the loft, after it had been adapted for the purpose.

Since then, the railway has seen two complete rebuilds, with the result that the present system takes full advantage of the generous space, approximately 20 ft by 15 ft, afforded by its location. A double track main line, roughly rectangular in form, runs close to the outer limits of the baseboard structure throughout and affords maximum 'mileage' for train running. Along one stretch, the main line passes through a fairly long tunnel and near each tunnel entrance is a double junction leading in each case to a terminal station. One of these stations is named *Oakham* and the other is *Braintree and Bocking*. Each has its system of sidings, separated from the actual station tracks, yet readily accessible from a single long loop or avoiding line. This line linking the two stations is useful not only for freight movements to and from both yards, for light engines and empty stock, but also as a diversion route for up or down traffic if necessary.

Each of the terminal stations is well laid out to give arriving trains a choice of platform while those departing can readily be routed to reach the appropriate main line track at one or other of the double junctions previously mentioned. Since the goods sidings at each station are all directly connected to the avoiding line mentioned earlier, this line can be used as a headshunt, or shunting spur when long trains are being dealt with.

Train services are provided on a generous scale. In addition to Hornby Corridor Coaches for making up standard express trains, there is a set train of Pullman Cars for luxury express services. For stopping train services, apart from those worked by steam-type locomotives, the No. 3250 Electric Motor Coach, and the corresponding Driving Trailer No. 4250, with several Suburban Coaches between them, make a splendid multiple-unit set. The hardest main line passenger

turns are shared by a Deltic Diesel and various Hornby-Dublo steam-type 4-6-2s, including a S.R. '*Dorchester*'. L.M.R. 2-8-0 B.R. 2-6-4 Standard Tank Locomotives maintain a high standard of power for freight and residential services. A Castle 4-6-0 and other types of locomotives represent W.R. practice.

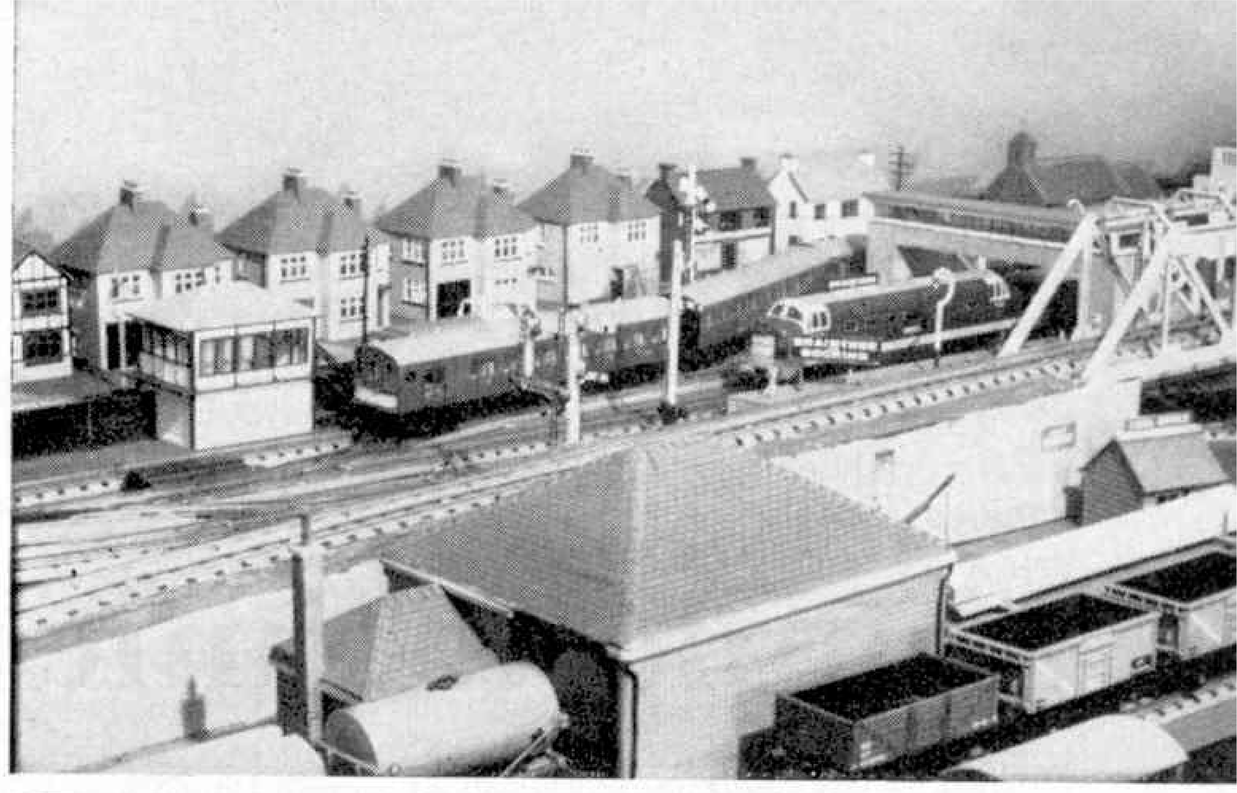
In the station areas, points and crossings are used together in such a way that a train approaching either terminus can be run into any of the platform tracks. Similarly, a train leaving any platform can make its way to the required main line track to continue its journey. This is a great asset from an operational standpoint, particularly if special or extra trains are being run.

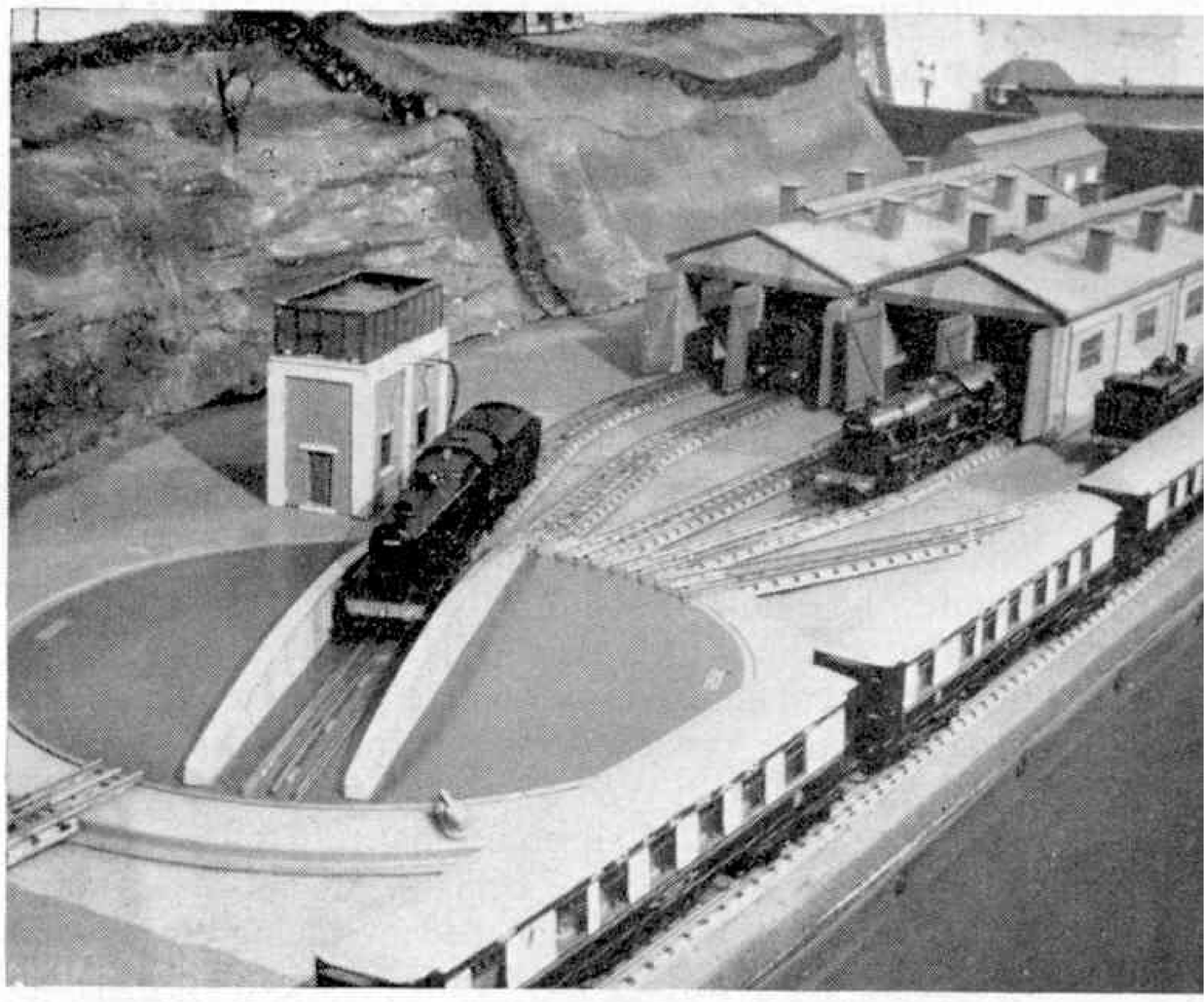
Ready access from one track to another helps in the disposal of 'empty' long-distance trains, and the necessary movement of light engines. Tender locomotives do not run round their trains on arrival, but have to use either of two turntables. There is one of these near to each main station and each turntable serves a locomotive depot. One situated at baseboard level stands a little way from *Oakham* Station; the other is on a high-level structure above the carriage sidings at *Braintree and Bocking*—a novel, space-saving situation.

This arrangement, however, involves an exceptionally steep climb so that the shed approach track clears the avoiding loop. Still, as engines alone have to negotiate this, no special difficulties in working are encountered. There are in real life one or two places where locomotives have to contend with this sort of thing on their home premises, so the scheme in miniature is not unreasonable. It is certainly justified from the point of view of space and siding accommodation, as it is necessary to store, on the layout, the 23 locomotives in service, with some 50 coaches and 90 wagons. Of the two engine sheds, one has been built up from the standard Hornby-Dublo No. 5005 Kit, with the No. 5006 Extension Kit added to make up a four-road shed. The other has been built up from balsa wood.

Balsa has also been largely used in the construction of the two stations, with the addition of units from various kits. The completed results are quite convincing. A miniature town—a pleasantly varied kit—assembled combination of houses and one or two shops, part of which you can see in one of our pictures—forms the background to *Braintree and Bocking Stations*. There is as yet little actual scenic background, although no doubt this will come in time. But there is some well-executed modelling over the tunnel which conceals the main line tracks alongside *Oakham* locomotive sheds. Over the tunnel bore, screwed-up newspapers, covered with wire mesh, have provided the basic shapes for the final surfacing of plaster of Paris, which has been suitably coloured.

From the control point of view the layout is particularly well equipped. There are two main control panels on which are grouped the controllers for the movement of the trains, the section-isolating and point- and signal-operating switches. All points—there are more than 40 of them—and signals are electrically operated, and the track is divided almost throughout into isolating switch-controlled sections. By this means practically any section can be isolated at will.





Top: A striking view at one end of 'Braintree and Bocking' station on the Hornby-Dublo layout of R. Mabey, of Solihull, described in this article. Co-Co Diesel 'Crepello' is leaving the station, while a Suburban Electric makes its way into a side platform.

Middle: A realistic view of 'Oakham' motive power depot, showing a 2-8-0 Locomotive coming on to the Turntable, from which the shed tracks radiate. Pullmans are passing on the inner loop line.

Bottom: S.R. 4-6-2 'Dorchester' arriving at 'Oakham' with an express. The continuous main line is in the background, while in the front of the picture is a line of vehicles ready for express freight working.

Opposite: 'Oakham Branch Junction', with Hornby-Dublo 'Dorchester' on the main line. Private-owner wagons in the foreground are Peco products, the other vehicles being Hornby-Dublo.

by **LINESMAN**

Simple techniques for scenery

THIS ARTICLE is the first of a series of three intended to show readers the why and wherefore of scenery construction. They will cover every facet of scenery construction including hillmaking, treemaking, roadmaking, embankment construction, track ballasting, bridge construction, and many other subjects. I will give, wherever possible, a choice of several different techniques, so that you may employ the method that suits your particular needs best.

This instalment deals with typical construction methods involved in making hills, slopes, and other types of rise. Figures 1-7 show the sort of embankment formed by different qualities of ground. Fig 1, for instance, shows the flat embankment found where ground composed of seeded loam is predominant. A shale cutting is illustrated in fig 2; this type of cutting is usually grassless, with the exception of an occasional tuft found near the crest. Rock of this nature tends to jut out in flat, even layers, and may best be modelled by slicing plaster that is almost dry with a sharp knife. The hollowish cliff shown in fig 3 is usually a yellowish colour, with grass growing in occasional tufts on the embankment. This material is stiff clay, and is never used to form steep banks because of its tendency to slip. Fig 4 gives an example of an excavated cutting, which is usually seen as high, sheer cliffs, the cutting having been hewn from the solid rock. Cliffs such as that shown in fig 6 are prone to landslips, due to the nature of the soil, and a result of such a landslip is illustrated in fig 5. The embankment shown in fig 7 is the sort on which trees are likely to grow, and is the type of embankment which may well be seen on many a country line.

Give it depth

A hill placed at the rear of the board, preferably with a smaller hill, or slope, at the front will give depth to a scene, and will make the track in the centre look longer. There are many other situations where there should, or should not be, hills. A trap to avoid is the placing of a high hill at ninety degrees across a baseboard. This will reduce the apparent width of your baseboard and destroy any illusion of spaciousness you may have been trying to create. Hills are permissible at the ends of baseboards under special circumstances. One is that the surrounding scenery is of the same height and character, and the other that a hill in this position must be built to cross the baseboard at an angle.

Let us, think about methods with which to make the type of hill that will relieve the monotony of a bare expanse of track and baseboard. The three favourite methods in use vary in strength, effectiveness, and simplicity. The first of these is the oldest known to the model railway world, and employs a backing of hardboard, plywood or any other material that is reasonably stiff. As shown in fig 8, a contour is cut along the top of the backing which is then nailed on to the rear of the baseboard. When this is completed, newspaper is crumpled up and placed ready for use. Brown paper is glued to the top of the contoured backing, and to the baseboard—forming the beginnings of a hill. The newspaper is then pushed under the brown paper as tightly as possible, and the brown paper is sized with a glue solution to stiffen it. When this is dry the brown paper is painted with a flat brown undercoat, preferably a burnt umber or similar colour, and sawdust, which has been previously dyed, is sprinkled on. The sawdust should be dyed in batches of several colours to give variety. I would suggest a light green, a yellow green for ordinary grass, a light green of a slightly bluish shade, a dark green, and browns of about three different shades. It must be remembered that grass is yellow green, not blue green, which is more suitable for tree foliage.

The sawdust is placed in a bag and left in a pan of dye and water for the period recommended by the maker. It is then dried in an oven.

Two variations

This method of scenic construction is a little old fashioned, but many modellers still use it. There are two interesting variations which you may consider a little easier to follow. In one, the brown paper is built up as before, but medical lint is applied instead of sawdust. This is glued into position, and a light green water colour is either sprayed on or, if no spray is available, brushed on lightly. This gives a scale grass effect, and will not result in grains of sawdust leaving the hill and depositing themselves on the floor over a period. The disadvantage of medical lint is that it is by no means cheap, and a certain amount of skill is needed to prevent the fluffy part of the lint from lying flat when painted. Another variation of this method is the application of plaster instead of lint or sawdust, but because the preparation of plaster is a subject by itself, I shall describe it later.

The third recognised way of landscaping hills is to use *papier-maché* on a base of fine chicken wire. As this method is one in which it is all too easy to become covered in plaster, sawdust, glue and other materials,

FIG 1

FIG 2

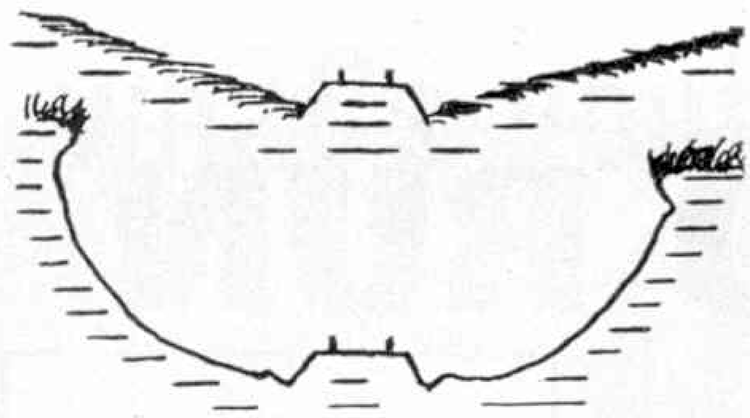


FIG 3

FIG 4

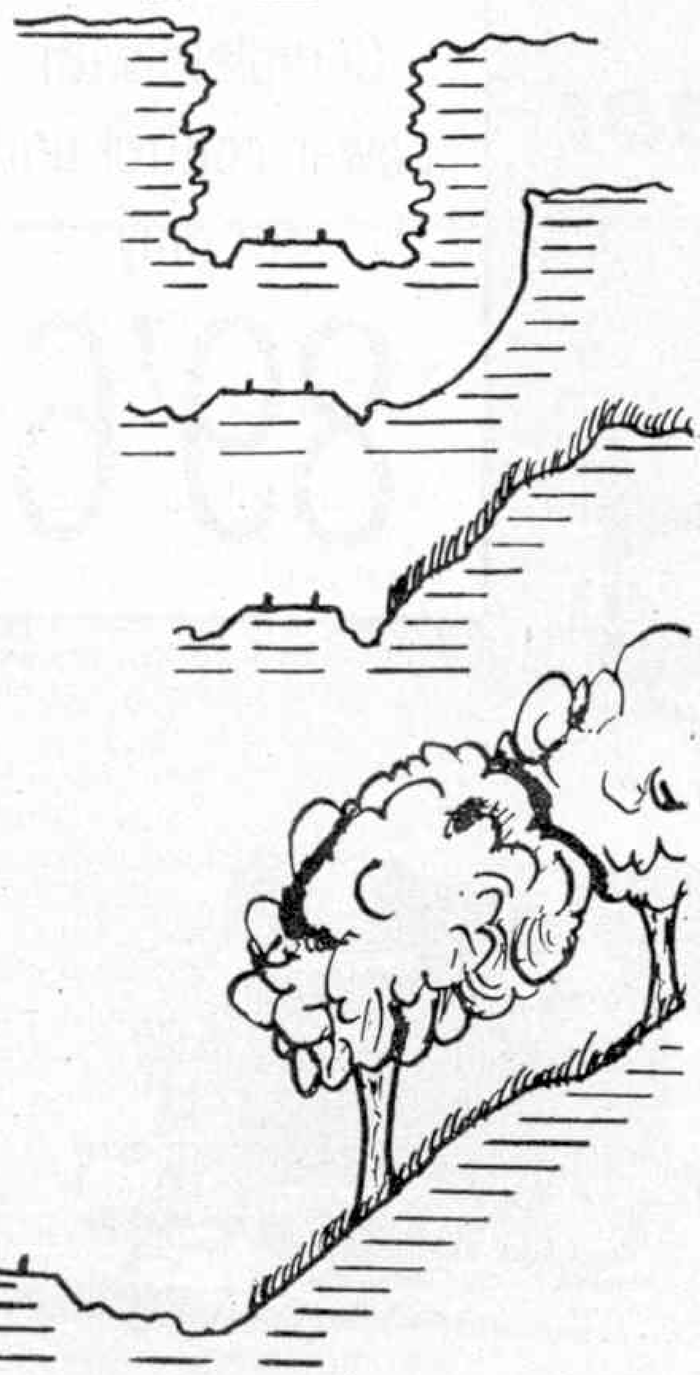
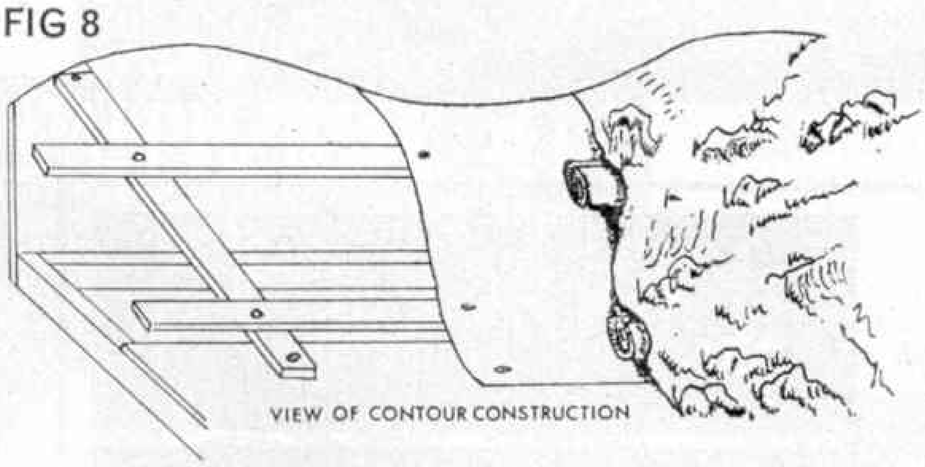


FIG 5

FIG 6

FIG 7

FIG 8



I would strongly advise you to wear an apron. The basic *papier-maché* is made by simply boiling newspaper, previously torn up, in a panful of water. Plaster and glue size are added from time to time. When this mixture becomes a whitish grey spongy mass, it is ready to be applied roughly. Slice and shape the mixture with a knife where rocks or other formations are required. When the *papier-maché* has dried—a process which should take two days—you can colour it with paint, or you can paint it, or coat it with glue, and then sprinkle either fine sand or sawdust on the surface while it is still wet. (More detailed instructions on the making of *papier-maché* will be given in an article next month.)

The last method I intend explaining this month is my own favourite method, and although it is not the easiest, it is certainly the most effective. It involves the use of wire mesh and *papier-maché* once again, but *papier-maché* of a different type. Instead of the 'saucepan system' described above, this method of producing *papier-maché* does not involve any great upheaval of domestic life. It is, in fact, much easier, quicker and simpler. It involves tearing newspapers into strips and glueing them on to the wire mesh with Polycell or any of the well-known wallpaper pastes. The paper should be built up to about three or four layers, and should be allowed to dry completely before covering with an earth mix.

Earth mixes

Many materials are used for earth mixes, and I could probably devote a complete article to the different mixes that may be used. I shall, however, give a rule of thumb method for those of you who desire a little more than just ordinary plaster as a covering surface. My own preference is Polyfilla, which dries a lot more quickly, and is, indeed, stronger and less prone to cracking than ordinary plaster, which usually leaves an embarrassing white scar across your scenery if any temperature change, or movement, takes place. To give a reasonable earth grass appearance I would mix about the same volume of sand to that of Polyfilla, which should be stirred thoroughly in a vessel before applying on top of the *papier-maché*.

You have before you the most popular methods by which scenery is built. I leave it to you to choose the one to which your modelling skill is most suited. Next month, I hope to show you how to paint scenery, carve rocks, and build up the ground from the baseboard surface.

And don't forget; there will be complete and detailed instructions on the making of that invaluable substance, *papier-maché*, **in next month's** *Meccano Magazine*.

(*Photograph*): This real-life cutting will show the modeller the sort of lineside scenery he can hope to emulate. The picture, from the days of steam, shows Battle of Britain class 4-6-2 locomotive No. 34077 '603 Squadron' on its way to London from Ramsgate. Photograph by S. Creer.

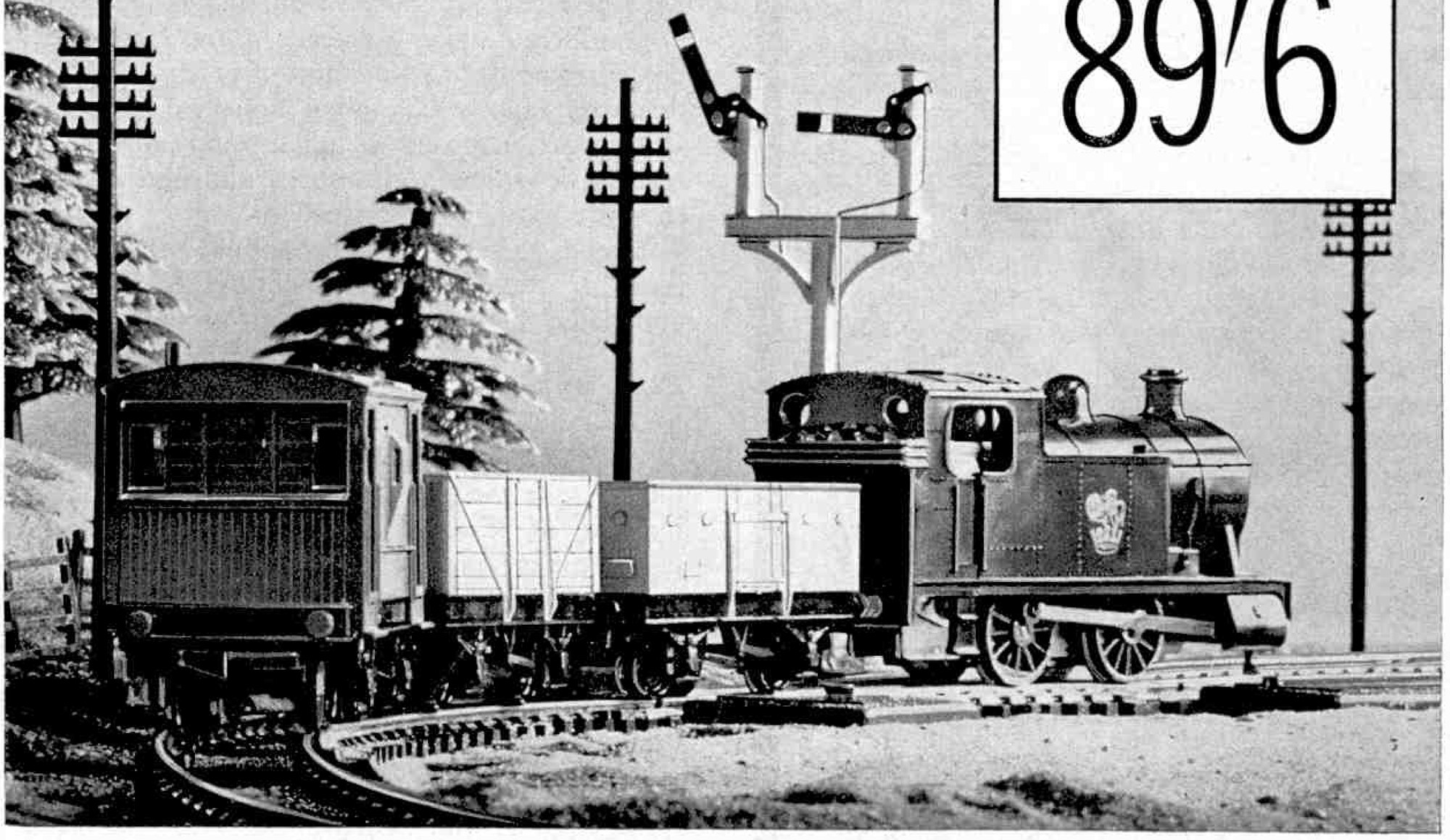
READY TO RUN

2 RAIL · 00 GAUGE

HORNBY 2001

Complete with power/control unit for only

89/6



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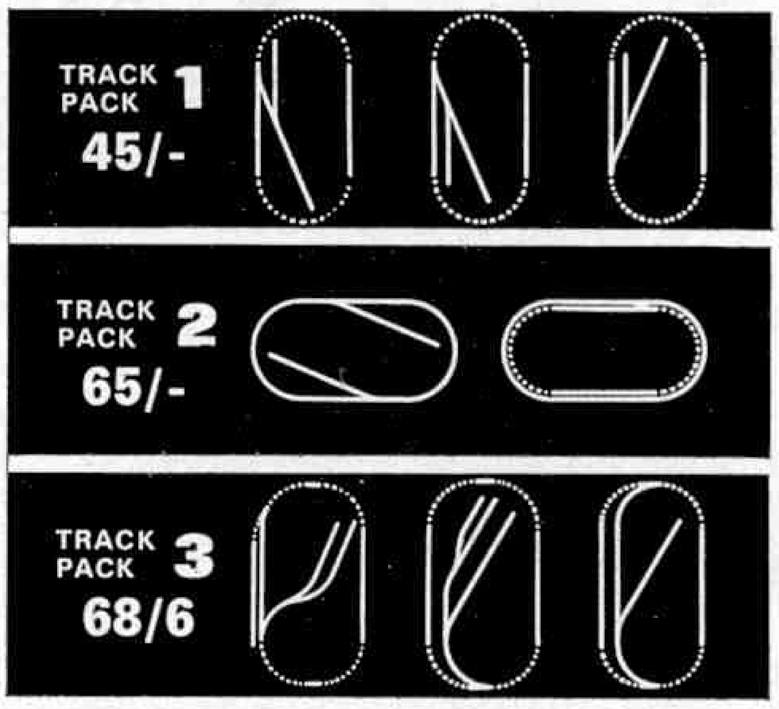
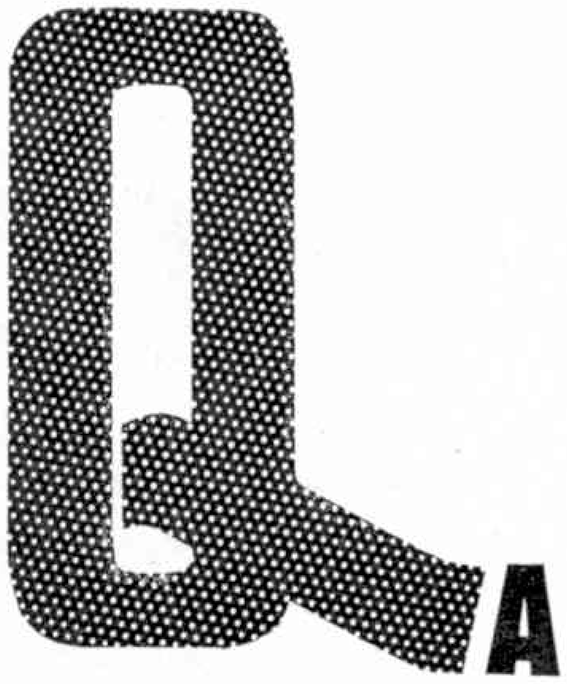


what's your problem?



Have you a problem—in science, history, literature or any other subject—to which you cannot find the answer?
Ask Tom Sheridan and he will do his best to answer it. If he cannot, and he thinks one of our readers might be able to help, he will print your query in this feature. Questions should be sent on postcards bearing your full name and address (but these will not be published if you put them in brackets and just add your initials or a pen name). Address them to Tom Sheridan, *Meccano Magazine*, Thomas Skinner and Co. (Publishers) Ltd., St. Alphage House, Fore Street, London, E.C.2.
You may submit as many questions as you like. We will deal with as many as possible each issue.

School for Frogmen

Q. *I want to be a frogman. Is there any school where I could get special training? —T. McK., Leicester.*

A. The only school for frogmen in Europe at present is at Garennes-sur-Eure, in France. There, students learn all about diving equipment and acquire the basic skills which will enable them to take part in salvage operations on the ocean-bed, do maintenance work on piers and aqueducts, and all the jobs involved in underwater technology. Much of their early training, such as metal-cutting and welding, is done in a diving pool fitted with portholes through which instructors can watch their progress. Mental qualifications are as important as physical fitness.

Moon films

Q. *Who made the first film about a voyage to the Moon?—'Astronaut', Huyton, Liverpool.*

A. A French pioneer of the cinema, Georges Melies, who specialised in 'magical' films as long ago as the 1890s, made a comic fantasy called *A Trip to the Moon* which is now a minor classic. The first serious film about a Lunar voyage, *By Rocket to the Moon*, or *The Girl in the Moon*, was made by Fritz Lang in Germany in 1930. Based on a story by Thea von Harbou, it was inspired by current German ideas on space-flight. The first American colour film presenting the modern concept of astronautics was *Destination Moon*, produced by George Pal in 1950.

Super-cold

Q. *What is cryogenics?—'Puzzled', Luton.*

A. It is the name given to the study of how materials behave at extremely low temperatures. For many years scientists have been experimenting with 'super cold'—as close as possible to absolute zero—and temperatures within one or two degrees above this point are now produced by special refrigeration machines called 'cryostats'. At such temperatures all known substances except helium gas become solid, and metals like lead and copper lose all resistance to electric current, so that a current started in a ring of metal continues to circulate indefinitely even after the power source has been cut off.

Musical boxes

Q. *Is there a book which tells you all about musical boxes and such-like instruments?—A.P.R., Weymouth.*

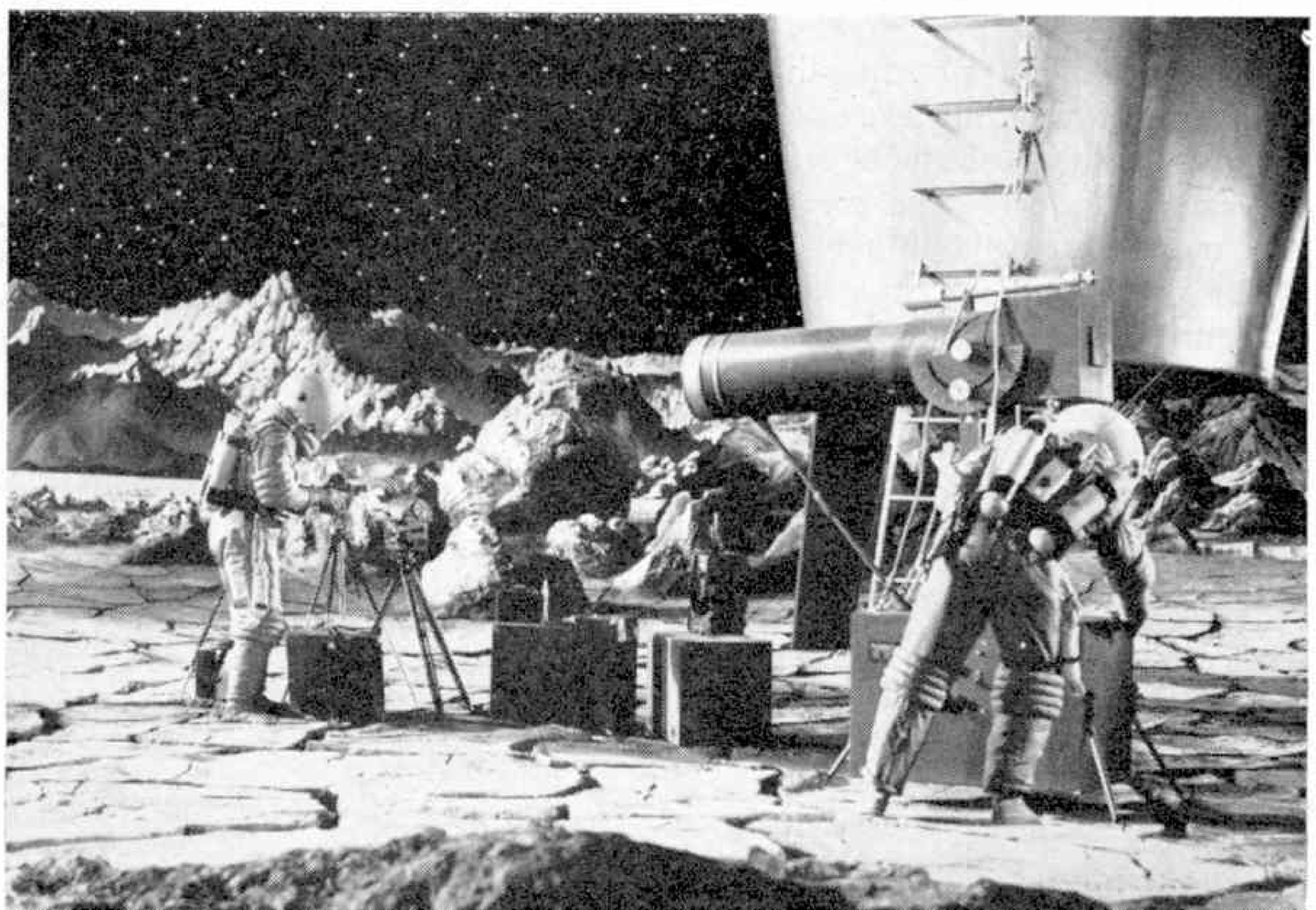
A. The standard work for collectors is *Musical Boxes*, by John E. T. Clark, first published by Allen & Unwin, London, in 1948. A third, enlarged edition, giving a complete list of British and Continental makers, appeared in 1961, price two guineas.

TV prophet

Q. *Who first coined the word 'television'? —T.H., Sandown, I.o.W.*

A. First use of the term in a technical article on 'Television and the Telephot' was in a magazine called *Modern Electrics* published in New York in 1909. The author was Hugo Gernsback, who in 1911 also wrote a science fiction story introducing the *Telephot*, a colour TV-telephone device by which the hero and heroine communicated across the world in the year 2660. The story also foresaw radar, fluorescent lighting, microfilm newspapers, and the electro-encephalograph, besides predicting weather control and space-flight.

Left: Person to person television as foreseen in science fiction over 50 years ago
Below: A scene from the George Pal film 'Destination Moon'



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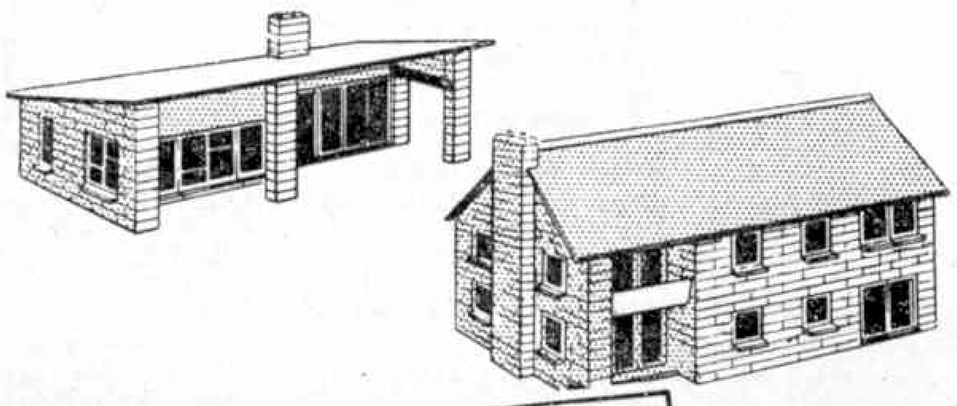

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Pont du Gard. One of the Romans' most impressive architectural wonders, the Pont du Gard, in Southern France, carried the waters of the Eure and Airon across the valley of the Gard to the town of Neumausus (now Nimes). (1)

Stamp Gossip

Phosphor Lines. I am frequently asked by collectors interested in our own stamps (particularly those of the present reign) how they can tell whether the stamps they possess have phosphor lines or not, seeing that the phosphor concoction used for making the lines is transparent. Also, I have been asked once or twice recently what other countries have followed the lead of our Post Office by similarly marking their stamps to facilitate electronic sorting. Well, it is easier to answer the second question. As far as I know, Canada, West Germany, Switzerland and the U.S.A. have also followed our lead, although they all like to give their own designations to the same idea. For instance (and don't ask me why!) Canada calls her phosphor stamps 'tagged'. Regarding the difficult job of spotting the phosphor lines—if you have stamps with selvedge, the lines are visible on the margins. Also if you place your stamps in hot water (obviously you cannot do so with mint stamps) the lines come up white when the stamps are dry. But here is a word of warning—many collectors might consider that stamps thus treated are spoiled in the process, so it is up to you. It is also possible at times to spot the lines, if light is thrown on the surface and the stamps are examined at an angle. There is just one more hopeful point. I have noticed that when the stamps are kept for some time (this is particularly so with the 4½d value) the lines gradually show up with pale brownish or yellowish tinge. As for the British stamps (current) which have these phosphor lines, a full list is given in the Commonwealth QEII Catalogue, and I am mentioning this because there is one stamp, the 1/6 value, which is not listed, for that value appeared only recently. And, of course, there is the 'COMPAC' stamp also, phosphor lined, which was issued last December.

Errors.

Collectors are always interested in errors, and so there has been quite a rush for the 'Besant' stamp issued by India last October. As a rule the errors which come a collector's way have to do with the actual printing of the stamps, but in the case of this Indian stamp (I have our good friend Mr. Kooka, of Bombay, to thank for a copy) it is the date of birth of the late Indian leader which is wrong. On the stamp it is given as 1837 but it should have been a decade later, 1847. Of course, when the error was noticed there was quite a rush to buy the stamps, and I read in one newspaper that only 60,000 had been sold. This is nonsense, of course, for more than that number would go to collectors overseas. Anyhow, the Indian Post Office apparently decided to do nothing about it, which was a good idea, for thus every collector who wanted one could obtain one for a copper or two. (6)

Another Popular Country

In spite of occasional political upsets, British people have a warm feeling towards Greece, and as this latter country issues particularly colourful stamps, it is only natural that these enjoy big sales. They are popular everywhere in fact, and so the set issued on December 5, to commemorate the millennium of Mount Athos, is a winner in every respect. I cannot resist asking the Editor to illustrate one of the eight which makes up this magnificent set. Which shall it be? All eight are beautiful. I will ask for the 6.00 value which in glowing colours depicts the first of the twenty monasteries on Mount Athos. (4)

Sabah

Never heard of it. What is it—a new vegetable? No, it is the new name for a country, the stamps of which have always been very popular with collectors. The country is none other than North Borneo, that paradise of exotic flora and strange fauna. The handsome set issued in 1961, which is being overprinted with the new title Sabah, will no doubt be replaced later by an entirely new set. In the meantime the overprints will be very popular. Why the change? North Borneo now forms part of Malaysia, (3)

The Tip of the Month

A New Zealand reader, Mr. J. D. Groves, of Wanganui, who was kind enough to say that he enjoyed my notes, enclosed his letter in a first day cover, with the two 'Railway Centenary' stamps issued by New Zealand on November 25 last. (5)

Let me say right away that New Zealand stamps in general are among the most popular of all in the Commonwealth (with good reason, let me add, for the New Zealand Post Office always plays fair with collectors, while many others do not) and it is sets such as the latest pair which, in the long run, always more than pay for their keep. Since the theme of the designs in this case will mean that thematic collectors all over the world will also want the stamps, what are you waiting for?

1

2

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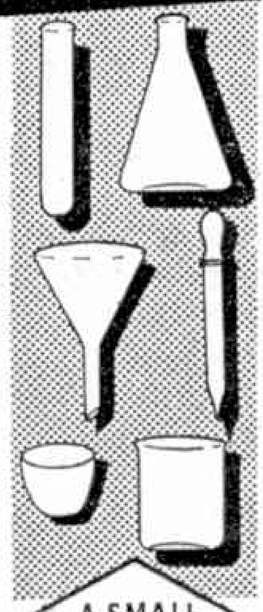

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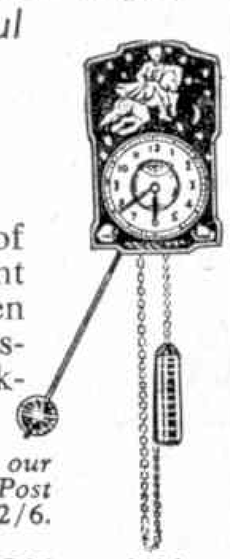

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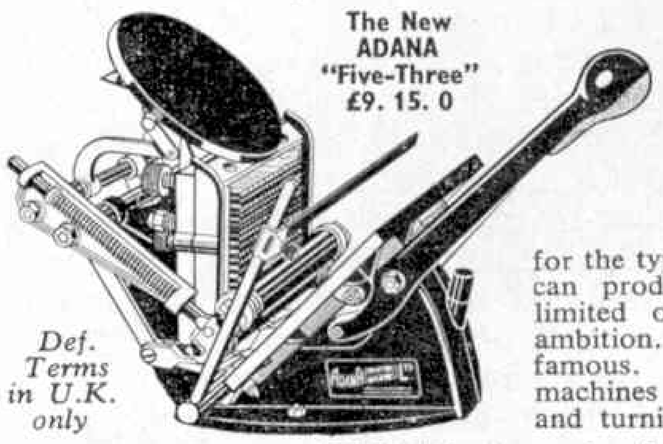

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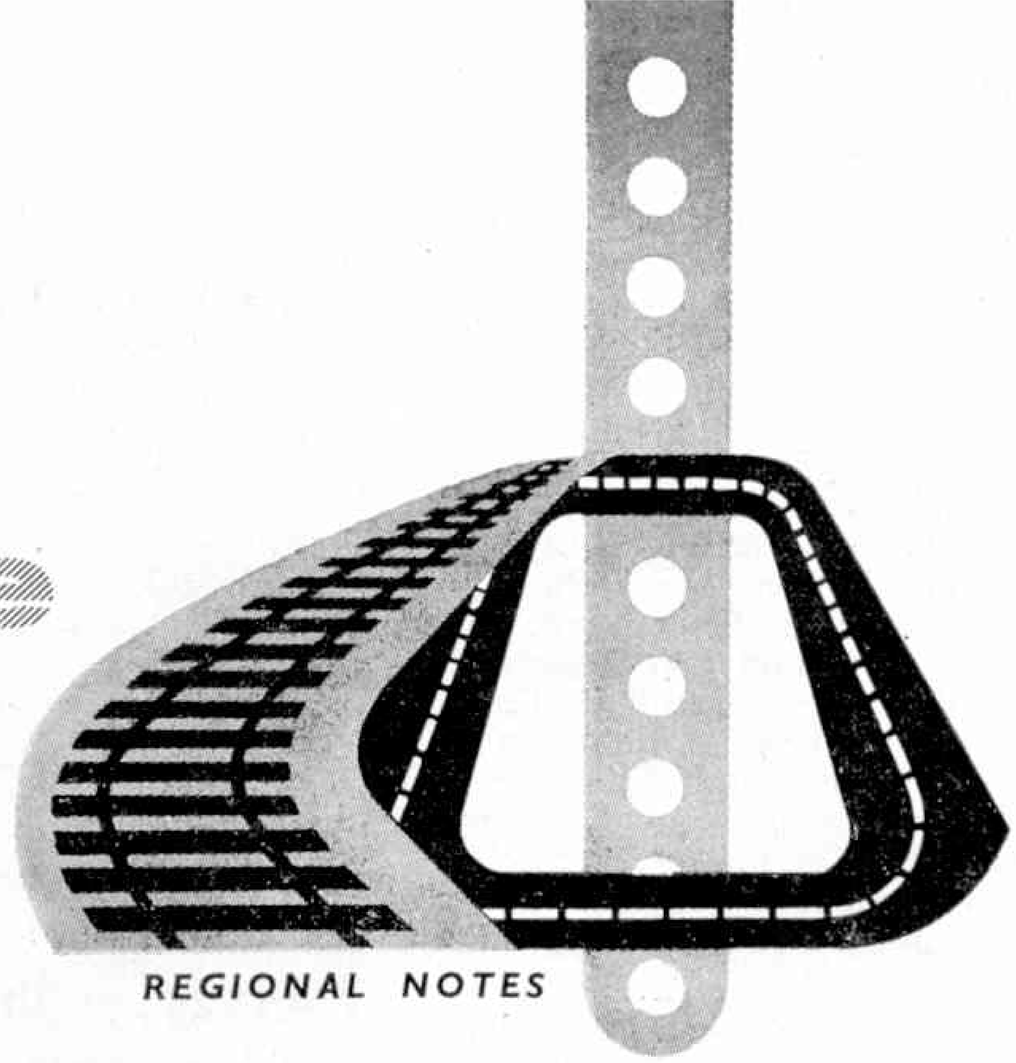
Around the SOCIETIES



Readers of "Club and Branch News" should note that this feature will appear in a subsequent issue.

Middleton Railway Trust

THE OPENING of a new branch line is an unusual event nowadays. In January, the Middleton Railway Trust opened at Moor End, the branch line which connects the main line of the 1758 Middleton Railway Trust, Leeds, with the hitherto isolated internal rail system of a Hunslet fabricating factory. The line was the result of the work done by members of the trust who planned, graded, and constructed the branch line on a completely voluntary basis.

The fitting of an ex-British Railways point on the last day of November marked the end of the construction work. Three weeks of intensive activity were needed to install the point, which was subsequently set and inspected to British Railways' standards. To enable the daily freight traffic to continue temporary rails were laid in position while work was still going on.

The famous ex-broad gauge steam crane, which originally ran in 1880 on the Great Western Railway at Gloucester, and which is now owned by the railway, performed sterling work during the operation. A vintage Midland Railway hand crane was also used to help in the lifting and laying of tracks.

The railway is now able to carry the traffic between the two works on the line that belongs to the same company. This development will not only provide economies in transport for the firm concerned but will remove some heavy industrial traffic from the crowded roads of Leeds.

East Ham & District M.R.C.

THE CLUB is at present undergoing a re-organisation to allow work to continue without interruption on the OO and EM layouts. The well-known OO layout is to be given a new look, having given yeoman service over the past three years. The EM layout, which was a very recent introduction, is proceeding very steadily and promises to be extremely realistic. Both OO and EM layouts are in need of additional help, and new members are encouraged to participate in the construction of either layout.

Ever since the club's formation, in 1960, visits have been frequently arranged to places of railway interest. This has been partly for members' own enjoyment, and partly to enable them to gain a wider knowledge of railways. A visit has been arranged on March 15 to Eastleigh Works and Sheds, and with the kind co-operation of the Hampshire Narrow Gauge Railway Society members will be visiting their workshops. If sufficient time is left after these two visits have taken place it is hoped to tour some of the dock lines at Southampton. The journey will be done by train, which it is hoped will be steam hauled. The club will reserve compartments on the train travelling from Waterloo at about 9.30 am and arriving back at about 10.30 pm. The fare, including a detailed itinerary, will be 21/-. The club extends a very warm welcome to old friends who have joined them on previous visits, and to new friends who will travel on this special visit. The programme for March is as follows:— March 2, practical night; March 9, Track night OO; March 15, visit to Eastleigh Works; March 16, Practical Night; March 23, Track Night EM. Meetings are held in St Gabriel's Church Hall, Aldersbrook Road, Wanstead, London, E.11 (101 bus to the door). Details of the club and of visits may be obtained from Mr. G. R. Lloyd, of 32a, Goldsmith Road, E.10 (LEY 9270).

R.C.T.S., S.L.S. & I.R.R.S.

THE RAILWAY Correspondence and Travel Society, the Stephenson Locomotive Society, and the Irish Railway Record Society joint tours committee are negotiating with railway authorities in Ireland for a steam-hauled special train. It is hoped to run a nine-day tour of railways in both Eire and Northern Ireland from Friday June 5, 1964. It is hoped to visit many little used, scenic lines, and the train on which the tour is to be conducted will include a refreshment car.

Hotel arrangements will be made for those persons who require it; alternatively, reservations may be made privately. Further details may be obtained by sending a stamped addressed foolscap envelope to Mr. J. E. Davies, of 31 Patricia Gardens, Bishop's Stortford, Herts.

'Sussex Downsman' Railtour

BELOW ARE details of a forthcoming railtour to be organised jointly by the Railway Correspondence and Travel Society and the Locomotive Club of Great Britain. The tour will provide an opportunity to travel over a number of lines in Sussex by steam for the last

time. It is to take place on Sunday March 22, and the train will leave Waterloo Station at 9 am. Several of the routes to be covered are, in fact, threatened with the withdrawal of their passenger services.

After calling at Epsom, the train will proceed to Horsham via Guildford, and then Hove and Three Bridges by the Steyning line. Then the train will travel to Tunbridge Wells West, via East Grinstead, and on to Pevensey and Polegate via the Heathfield line. From Pevensey Station the train will return to Lewes Old Station, and subsequently to Falmur and Brighton, and the Kemp Town branch. The inward journey to London Victoria (arr 7.42 pm) will be made via Lewes, Uckfield, Oxted, and East Croydon.

The train will be hauled by a wide variety of motive power—a southern class Q1, N class Pacific, a West Country Pacific, and a standard class 2 tank locomotive on the Kemp Town branch. Breakfast, lunch, and dinner will be available on the train, but should be ordered in advance. Buffet facilities will be available throughout the tour. The fare is 10/- (including itinerary) and there will be a limited number of tickets for accompanied children at 23/-. Applications for tickets should be made to Mr. J. Mitchell of 56 Cyles Park, Stanmore, Middlesex, enclosing a stamped addressed envelope, of foolscap size, for each ticket ordered. Tickets will be despatched some seven days before the tour.

The Southern Society

THE SOCIETY fixtures for March are as follows:—March 14, Visit to the Redhill-Guildford-Reading line, including a visit to the motive power depots along the route; March 7, Visit to Nine Elms and Norwood Junction motive power depots. Indoor meetings are held regularly on the second, third, and fourth Mondays in the month, at Streatham Common Station. Meetings commence at approximately 6.45 pm and end at 9.0 pm. New members are always welcome, and those interested should write to the secretary, Mr. R. Merry-Price of 10 Girdwood Road, Southfields, London, S.W.18. All inquiries regarding outings should be addressed to Mr. D. A. Guiver, of 46 Birchfield Avenue, Wallington, Surrey.

The Model Railway Club

THE CLUB fixtures arranged for March 1964 are as follows:—March 5, Film Show; March 12, Track Night (London North-Eastern Group); March 19, Track Night (Southern Group); March 26, Setting up at Exhibition, Central Hall; March 31-April 4, Exhibition, Central Hall.

The Christmas meeting took place at the club's headquarters, Keen House, Calshot Street, King's Cross, London, N.1. Please address all inquiries to the hon. secretary, Mr. D. A. Boreham, of 135 Mandeville Road, Northolt, Middlesex.

Readers who wish to join any of the organisations whose activities are outlined below should contact the secretary concerned and not the MECCANO MAGAZINE *offices.*

Variety . . . the Keynote at Manchester Show

THE ANNUAL exhibition of the Manchester Model Railway Society was, as usual, held at the Corn Exchange, Hanging Ditch. Many of you may have heard that the Corn Exchange, home of Manchester's exhibition for 27 years, is to be rebuilt, and indeed the society was under the impression that this year's show would be the last to be held there, but it transpires that the Corn Exchange is not to be rebuilt for at least another year. We should, therefore, see at least one more exhibition in this ideal hall. It has the great advantage of being accessible from the biggest shopping area in Manchester.

This year's exhibition included many of the more popular features introduced in previous shows. Among these exhibits were the G.M.T. gauge 1 electrically-fired steam layout, and the ever popular trams. The two tramway layouts at the exhibition deserved praise for the tremendous amount of reliable running they did during the exhibition. The first layout, owned by the Manchester Model Railway Society, had a fine selection of beautifully-made models operating on it. Variety was certainly the keynote on this layout, for models ranging from the last Manchester tram, to a Llandudno 'Toastrack', and a single deck 'California', could be seen running. The standard of modelling in all the exhibits was extremely high.

The locomotives running on the G.M.T. gauge 1 live steam layout were operated by an electric element in the boiler heating the water to raise steam. A safe 36 volts AC was drawn from the running rails and a centre conductor rail, the amount of steam raised being varied by the controller rheostat. A 24 volt DC supply via the same track and conductor was needed to energise a DC sensitive relay mounted on the locomotive, which, in turn, switched on a 24 volt DC motor that operated the combined regulator and forward-reverse valve. The locomotive was, therefore, under full remote control for steam raising and all other functions.

The display of static models did not appear to be as large or comprehensive as on previous occasions, but the models on show were of excellent quality, especially the train of L.N.W.R. coaches built by Mr. L. W. Arnold, who subsequently won the championship cup, the Pochin Cup, and other awards. London and North-Western Railway coaches are extremely difficult to make, because of the intricate panelling on the sides of the coaches, and it is to his credit that he is one of the few people to tackle the task successfully. Also of very great merit were the G.W.R. syphon vehicles exhibited by Mr. J. Whitaker, which justly won a diploma.

The lift bridge constructed by Mr. L. Holland, of Blackpool, demonstrated both his electrical knowledge and his constructional skill. The movable span took about three minutes to reach its uppermost heights.

An interesting exhibit was the narrow gauge quarry line shown by the Moseley Hall Grammar School. This is intended to represent a small 3 ft narrow gauge railway connecting a quarry with a canal basin. The quarry was made from plaster carved and sculptured until an effective result was achieved. The track gauge was twelve millimetres, and was of the type marketed by Gem Products. The rolling stock was converted from Triang TT underframes and chassis, which give very satisfactory service.

An interesting layout to those of you who are short of space was exhibited near the entrance to the hall. It was called the 'Coyote Gulch Railroad', and was, as the name implies, modelled along American lines. The layout was built to the American scale of 3·5 mm to 1 ft (known as HO gauge), but using a track gauge of 16·5 mm to 1 ft, similar to that used in British 4 mm models. The layout occupied a remarkably small space, approximately 3 ft square. This layout, like the 'Woodfield Tramway in a Suitcase', built by Mr. K. N. Walton, is probably the smallest ever to use 'OO' track, illustrating that there is never an excuse for not building a layout through lack of space unless, of course, you live in a telephone box.

Static displays were provided by many societies, the 2 mm Association, the Crawley Model Railway Society, the Historical Model Railway Society and EM Gauge Society. Also featured in the exhibition were the Festiniog Railway Society Ltd, the Narrow Gauge Railway Society, the Ravenglass and Eskdale Preservation Society and the Talyllyn Railway Preservation Society.—**M.R.**

Owing to a one-month extension in the closing date of the Hornby-Dublo train competition the winners' names will appear in the April issue of the 'Meccano Magazine'.

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Length $11\frac{5}{8}$ in. Beam $3\frac{1}{8}$ in. U.K. Price **14/11** (batteries extra)

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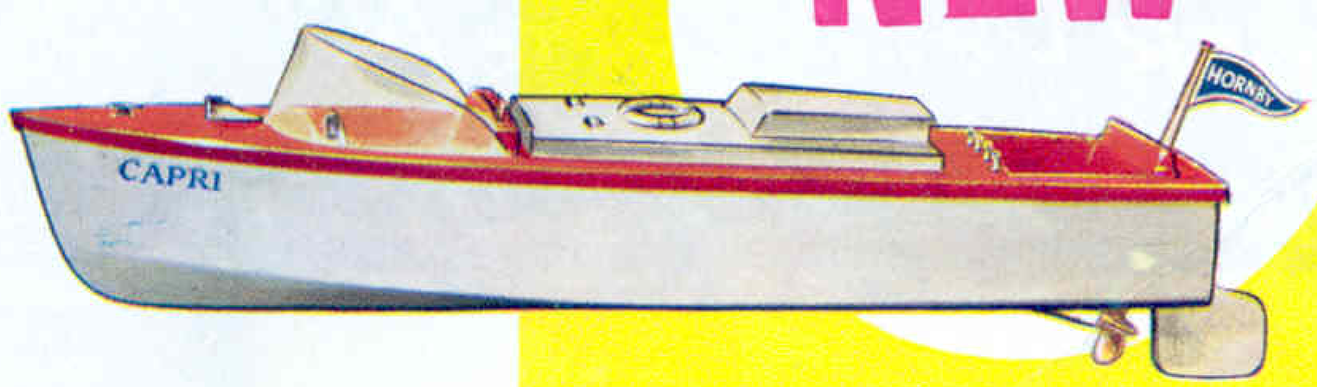

Model No. 5
R.A.F. RANGE SAFETY LAUNCH

With separate fittings, which include mast, handrails and search-light. The prototype is used on R.A.F. bombing ranges to keep stray vessels away from the danger zone. A strong clockwork motor gives a run of 120 to 140 ft. on each winding. Moulded in high-impact Polystyrene which combines toughness and strength with buoyancy and fine detail.

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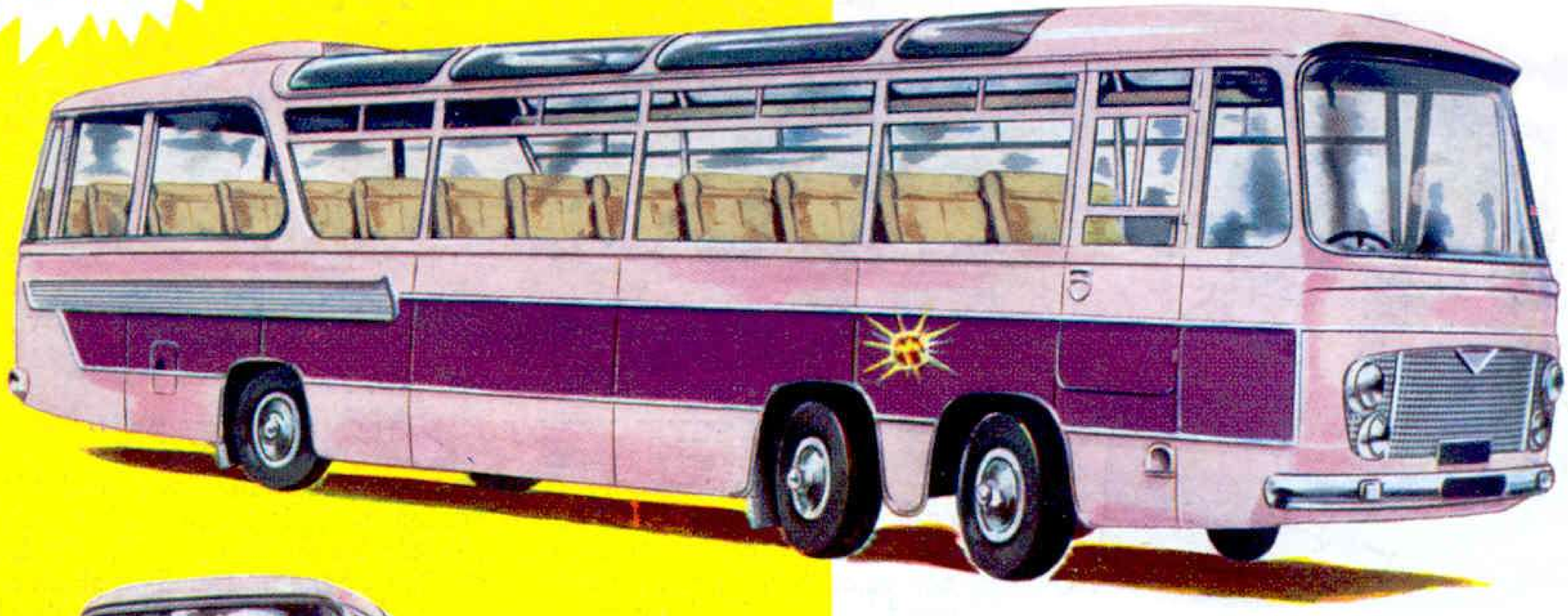

WITH FLASHING INDICATORS

(No. 952) VEGA MAJOR LUXURY COACH

This sensational model has three firsts for Dinky Supertoys! (1) Independently flashing indicators. (2) Twin-front steering axles, with Prestomatic steering on each. (3) An opening boot—never before seen on a Supertoy! Windows, suspension and interior fittings also included.
You're driving along and want to turn. Press down on the left or right side of the model—The respective indicator flashes and the model turns in that direction.

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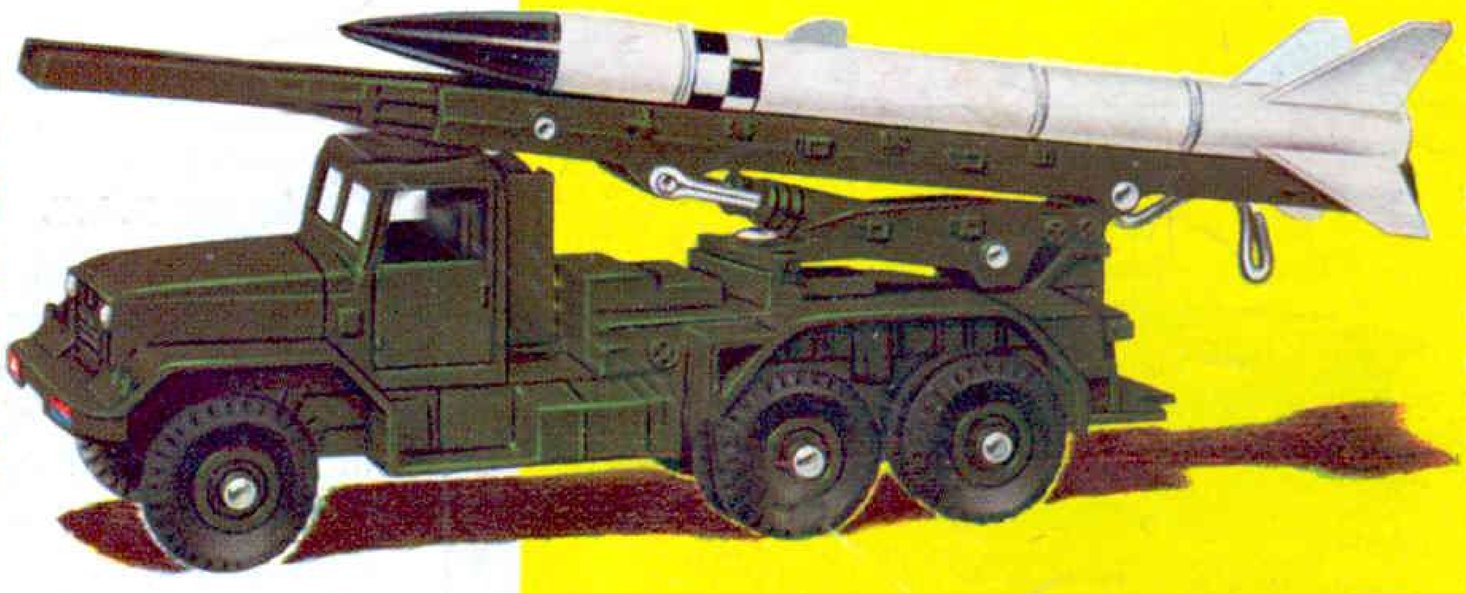
U.K. Price **17/11**



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